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Reducing Rumination Through Exploring Abstract Values

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Reducing Rumination Through Exploring Abstract Values

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Current research proposes that rumination, perseverating on thoughts about one's feelings and problems, predicts the severity, likelihood, and duration of depression (Nolen-Hoeksema, 2000; Spasojevic & Alloy, 2001). One factor that might affect rumination outcomes is the level of abstraction one adopts when thinking about negative experiences. A growing body of research demonstrates that adopting a non-abstract, concrete perspective (e.g., focusing on specific details and sensations) reduces rumination (e.g., Watkins, Baeyens, & Read, 2009). Additionally, some empirical evidence suggests that abstract thinking (e.g., focusing on values, meaning, and general concepts) increases rumination when focusing on negative content (e.g., Watkins, 2004). In contrast, other experimental studies suggest that there are types of abstract processing that reduce rumination (Kross & Ayduk 2008; Rude, Mazzetti, Pal, & Stauble, 2011).

This study built on the research supporting positive effects of abstract processing. The primary aim of this study was to determine if there are types of abstract processing that, when used in conjunction with concrete processing, can reduce rumination and can do so to a greater extent than concrete processing alone. Participants were asked to

examine negative experiences that were particularly bothersome and write about them from one of three perspectives: a) a mixed condition that encouraged participants to explore their abstract values and connect them to concrete thoughts and actions; b) a concrete condition that encouraged thinking only about concrete thoughts and actions; and c) a control condition that directed participants to write about their daily routines. A sample of 252 college students completed measures of rumination, OGM, and depression at pre-intervention, post-intervention, and a two week follow-up. Results indicated that the treatment effects significantly interacted with initial depression, such that participants who had high initial levels of depression had significantly lower rumination and depression in the mixed and concrete conditions compared to the control condition following the intervention. Findings suggest that treatment differences in depression were meditated by changes in rumination. The limitations and implications of the results are discussed in the context of the current literature.

Table of Contents

List of Tables

List of Figures

CHAPTER 1

Introduction

Negative events are certain to arise in each of our lives. Sometimes we are able to experience a negative event without any major impact on our psychological well-being. At other times we may repetitively focus on the negative consequences of the event, and may enter a ruminative cycle. Although definitions vary, in general, rumination can be described as repetitive thinking that usually centers on themes of discrepancy between current and desired status (Smith & Alloy, 2009).

Rumination has unique characteristics that distinguish it from other forms of repetitive thought. For example, both cognitive processing and problem solving can involve repetitively attending to a negative theme or problem. However, these forms of repetitive thought help individuals work through negative emotions and situations (Horowitz, 1985; Janoff-Bulman, 1992; Tait & Silver, 1989). In contrast, rumination is marked by a pattern of repetitive thought that leads to stagnation and increased negative affect (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky, Tucker, Caldwell, & Berg, 1999). Perhaps, the type of repetitive thought most similar to rumination is worry. Rumination and worry are significantly correlated and are characterized by cognitive inflexibility and difficulty in switching attention from negative stimuli (Fresco et al., 2002; Muris, Roelofs, Meesters, & Boomsma, 2004; Segerstrom et al., 2000; Watkins, 2004; Watkins, Moulds, & Mackintosh, 2005). However, factor analysis shows them to be distinct, and worry is more closely associated with anxiety, whereas rumination is generally more associated with depression (Fresco et al., 2002; Muris et al., 2004;

Segerstrom et al., 2000; Watkins, 2008; Watkins et al., 2005). Furthermore, worry tends to be future oriented, involves a fear reaction, and may be motivated by an attempt to plan for or anticipate future threats (Borkovec, Robinson, Pruzinsky, & DePree, 1983; Nolen-Hoeksema, Wisco, and Lyubomirsky, 2008). In contrast, rumination is characterized by a past or present focus, involves themes of discrepancy or loss, and is motivated by a desire to understand (Nolen-Hoeksema, Wisco, and Lyubomirsky, 2008). Thus, rumination is a unique psychological phenomenon, and given over two decades of research that establish a connection between ruminative thought and several mental health concerns, an important one to investigate.

Consequences of Rumination

Rumination is related to poor problem solving, memory deficits, and depression. Experimental inductions of ruminative-like thinking increase negative mood and decrease problem solving (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky et al., 1999; Nolen-Hoeksema and Morrow, 1993). Moreover, rumination contributes to overgeneral autobiographical memory -- difficulties recalling specific memories about the events in one's life (see Williams, 2007 for a review). However, by far the most researched aspect of rumination is its relationship to the development and maintenance of depression.

Empirical evidence demonstrates rumination is concurrently associated with depression and predicts the onset and severity of depression (e.g., Butler & Nolen-Hoeksema, 1994; Harrington & Blankenship, 2002; Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema & Morrow, 1993; Watkins & Teasdale, 2001). Additionally, the more propensity an individual has for rumination, the more likely a negative event is to

cause distress (Moberly & Watkins, 2008). Considering the relationship of rumination to depression, a disorder that the World Health Organization estimates will be the second most burdensome health concern in the world by the year 2020 (Murray & Lopez, 1997; World Health Organization, 2001), it is important to target the factors that cause and maintain rumination.

Control Theory

Control Theory (Carver & Scheier, 1981, 1990) offers a comprehensive theoretical structure for understanding the mechanisms involved in rumination. Control Theory purports that people self-regulate their behavior, including mental activities, through a feedback loop. Within this loop, present states are compared to salient goals (Carver & Scheier, 1990). According to Control Theory, all people have multiple goals, which fall along a hierarchy. At the top of the hierarchy are important but abstract goals, such as "human connection." As one moves down the hierarchy, goals are increasingly concrete. The lower levels contain specific behavior scripts for acting in line with the more abstract goals. For instance, "walking over and saying hello to my friend" might be a concrete goal that is in line with the higher-level goal of "human connection." When people's present states do not match their goals, they change their behavior to reduce the discrepancy. At times when the discrepancy cannot be resolved, negative affect is increased (Martin & Tesser, 2006). Control Theory explains rumination as a mechanism that occurs when individuals are repeatedly thwarted in attaining important goals. For example, people who are not making progress toward having "human connection" may ruminate on "how alone they are." A key component of Control Theory's

conceptualization is that rumination will continue until the goal is reached, a substitute means of attaining the goal is found, or the individual disengages from the goal (Martin & Tesser, 2006). The idea of a hierarchy of goals, with higher-level goals being more abstract and lower-level goals being more concrete, has led some researchers to examine whether thinking at certain levels of abstraction increases rumination.

Negative Effects of Abstract Thought on Rumination

Among research that examines the mechanisms of rumination, the work of Watkins brought attention to abstract thought as an important component of rumination (Watkins, 2008). Borrowing from a number of theories, including Control Theory, Watkins has defined thought at the abstract level as "general, superordinate, and decontextualized mental representations that convey the essential meaning of goals, events, and actions." He contrasts this with concrete thought, which he states, "involves subordinate, contextual, and specific details of goals, events, and actions." (Watkins, 2011, p. 261). Watkins and colleagues theorize that adopting high-level, abstract thinking during processing of negative content is akin to ruminating (Moberly & Watkins, 2006; Watkins, 2004, 2008). They argue that, as specific details are not available, a focus on abstract concepts makes problem solving more difficult; thus, moving out of rumination is more challenging. In addition, they suggest that if negative content is examined at the abstract level, negative feelings may be generalized across situations. For example, a bad grade on a test could cause students to generalize that they are "dumb."

Several experimental studies indicate that individuals, who are encouraged to think at a more abstract level, have higher rumination and negative affect than individuals thinking concretely (Moberly & Watkins, 2006; Raes, Watkins, Williams, & Hermans, 2008; Rimes & Watkins, 2005; Watkins, Moberly, & Moulds, 2008; Watkins & Moulds, 2005; Watkins & Teasdale, 2001). For example, Moberly and Watkins (2006) trained participants to examine photographs and think either concretely by imagining "the details of what is happening in each scenario" or abstractly by thinking "about the causes, meanings, and implications of each situation." The study found that for participants in the abstract thinking condition, rumination was associated with less positive affect. Watkins hypothesized that if high-level, abstract processing is related to rumination, low-level, concrete processing may break the ruminative cycle (Watkins, 2008). A recent study demonstrated that dysphoric individuals trained to think concretely had a greater reduction in depression and rumination than the waiting list control (Watkins, Baeyens, & Read, 2009). Therefore, research into level of abstraction has already yielded some possible treatments for rumination and depression.

Positive Effects of Abstract Thought on Rumination

Given that a connection between rumination and level of abstraction appears to exist, more research into this area could help to elucidate the nature of the relationship and create better treatments. One particular area that warrants further investigation is Watkins' contention that abstract thought about negative content inevitably increases rumination.

In contrast to Watkins' studies, several researchers experimentally induced types of abstract thought that reduced rumination. (Ayduk & Kross, 2008; Rude, Mazzetti, Pal, & Stauble, 2011). In multiple studies, Ayduk and Kross found that adopting an abstract but distanced perspective when viewing negative events (e.g., "take a few step back from the experience") decreased rumination (see Ayduk & Kross, 2010 for a review). Additionally, Rude et al. (2011) demonstrated that encouraging individuals to view negative experiences from a broader context also reduced rumination. For example, they asked participants to adopt an "abstract-contextual" perspective about a rejection experience by answering questions, such as, "How do you think you will view this event in 1–2 years?" Instead of leading to increases in rumination, this type of abstract thought actually decreased rumination compared to the control condition. Whereas Watkins (2011) argued that abstract thinking is "decontextualized," these authors suggest that abstract thought can provide greater context to negative experiences by giving the individual more perspective. Therefore, these studies provide experimental evidence for possible benefits of certain types of abstract thought in reducing rumination.

Rude et al. (2011) proposed that self-judgment might be a factor that determines the effect of abstract thinking on rumination. They suggested the detrimental aspects of Watkins' previous abstract conditions may, to some extent, arise from abstraction being confounded with self-judgment. In several of Watkins' studies, the abstract condition either explicitly or implicitly pulls for evaluation (Watkins, 2004; Watkins, Moberly, and Moulds, 2008). For instance, one study asked participants to think about their "empty lives" in the abstract condition compared to their "empty glass" in the concrete condition

(Watkins, Moberly, and Moulds, 2008). The thought "empty lives" seems to pull for more self-judgment in addition to more abstraction. Other studies have explicitly paired abstraction and evaluation. In one study, the condition was even named abstract-evaluative (Moberly & Watkins, 2006). In contrast, abstract thought that is not confounded with self-judgment may allow the individual to gain context on negative events.

There are also theoretical reasons to believe that certain types of abstract thought may be useful in reducing rumination, particularly when combined with concrete thought. From the Control Theory framework, abstract thought is beneficial in that it encourages personal meaning and ensures that lower-level actions remain directed toward what is important to an individual (Carver & Scheier, 1998). Consistent with this notion, an explicit examination of thwarted important goals could help organize actions and facilitate finding alternative ways to resume progress. Therefore, whereas Watkins contends that abstract thought is always problematic when examining negative content, certain types of abstract thought, coupled with concrete thought, may decrease rumination. In addition, Carver and Scheier (1998) highlight the importance of flexibility in one's focus on the levels of the hierarchy with the ability to move through different levels important for adapting to problematic events. As such, a perspective that encourages traversing the hierarchy may be most useful in reducing rumination.

The Present Study: Exploring a Mixed Perspective

Based on the divergence within the literature, an aim of the present study was to explore if certain types of abstract thought could be useful in enhancing concrete

interventions to reduce rumination. Specifically, the study included an intervention that asked individuals to examine their abstract values, explore them in terms of bothersome negative events, and find alternative concrete ways to act in line with their values. A sample of 252 college students, prescreened for a minimum level of rumination, was asked to write about negative experiences. Participants wrote four times over two weeks from either: (1) a concrete perspective that resembled Watkins and colleagues' concreteness training (Watkins, Baeyens, & Read, 2009), (2) a mixed abstract-concrete perspective that included an exploration of abstract values, or (3) a control perspective that asked participants to think about a negative event but write about an unrelated topic. The participants in the conditions were compared at post-intervention and at a two-week follow-up for reductions in rumination. It was expected that by learning to examine negative experiences from a mixed perspective, individuals would be less likely to ruminate than individuals who were trained to think concretely or not trained to think from a particular perspective.

Possible Beneficial Mechanisms of a Mixed Perspective

Given the research discussed above, this study explored three possible mechanisms through which combining an exploration of abstract values with concrete thought might prove beneficial. One possible mechanism is that an explicit exploration of values could help people act and think more in line with their values and find alternative ways to reach them. By moving between the concrete and abstract levels of thinking, individuals' actions may be more connected and better organized. This organization may also allow for the discovery of alternative examples of progress and new ways to move

toward important thwarted goals. Therefore, this study explored whether any significant decrease in rumination for the mixed condition would be due to an increase in the degree to which individuals acted in line with their higher-level values and goals.

The second proposed way that combining abstract values with concrete thought might reduce rumination is through encouraging greater personal meaning. According to Control Theory, one of the advantages of abstract thought is that it provides meaning (Carver & Scheier, 1998). Because abstract goals by definition are more important and meaningful than concrete goals, explicitly connecting concrete actions to abstract values may increase the importance of actions, and thus, increase meaning. Greater personal meaning is associated with lower levels of rumination (Michael & Snyder, 2005) and lower levels of depression (Mascaro & Rosen, 2008; Westerhof, Bohlmeijer, van Beljouw, & Pot, 2010). Therefore, it is reasonable to hypothesize that exploring values may lead to increases in meaning, which in turn may reduce rumination. Accordingly, this study explored whether an increase in personal meaning was responsible for improvements in rumination for the mixed condition compared to the other conditions.

A final possible mechanism that might be responsible for how successful the mixed perspective is could be the degree of self-judgment produced. As discussed above, Rude et al. (2011) suggested that self-judgment might be an important factor in determining the effect on rumination. Therefore, self-judgment was examined as a possible mediator to any change in the conditions.

Rumination and Overgeneral Autobiographical Memory

In addition to understanding which mechanisms might be responsible decreasing rumination in the mixed condition, it was also important to determine if decreasing rumination led to a reduction in related psychological processes. Thus, an aim of the study was to determine if cognitive styles related to rumination would benefit from any of the conditions. To this end, overgeneral autobiographical memory (OGM)—a tendency to remember self-referential memories in a non-specific way— was included as an outcome in the study (Williams et al., 2007). As rumination is thought to contribute to OGM, this study examined whether rumination mediated the relationship between the condition to which a participant was assigned and OGM.

Rumination and Depression

The final, and ultimate, aim of this study was to examine if any reduction in rumination by the conditions would lead to a reduction in depression. Measures of depression were administered to determine if the mixed condition led to a reduction in depressive symptoms and if changes in rumination mediated that reduction. It is hoped that the results of this study will help determine possible conditions under which a mixed perspective can diminish rumination, with the eventual goal of decreasing the symptoms and future onset of depression.

CHAPTER 2

Review of the Literature

This review establishes the importance of studying rumination by examining evidence that rumination contributes to various forms of psychopathology but particularly to depression. Next, theories about the causes and contributing factors of rumination are examined. This is followed by a discussion of recent research, which suggests that abstract thought might maintain rumination. Subsequently, an analysis of possible types of abstract thought that may reduce rumination is presented. The final section provides an examination of limitations in the current research and argues for the benefits of exploring the positive aspects of abstract thought in conjunction with concrete thought.

Rumination

Defining Rumination.

Although no unified definition of rumination exists, the most commonly used definitions have a great deal in common; generally, rumination can be defined as a form of repetitive thought that tends to center on themes of discrepancy between current and desired status and that stagnates processing (Smith & Alloy, 2009). Of the multiple theories of rumination, Nolen-Hoeksema's work on ruminative response styles is the most widely used. In this line of research, rumination was traditionally defined as "thoughts that focus one's attention on one's depressive symptoms and on the implications of these symptoms" (Nolen-Hoeksema, 1991, p. 569). For example, the ruminative styles questionnaire developed by Nolen-Hoeksema and Morrow (1991) asks individuals to rate the personal relevance of statements such as, "Think about how sad

you feel." Recently, Nolen-Hoeksema has broadened her view, defining rumination "as the process of thinking perseveratively about one's feelings and problems" (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008, p. 400). Others have taken an even more inclusive definition. For example, Martin and Tesser (1996) defined rumination as "a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts'' (Martin and Tesser, 1996, p. 7). A further exploration of various definitions will be presented with the specific theories of rumination. However, before discussing the intricacies of particular theories, it will be useful to examine why it is important to study rumination, namely, the connection between rumination and depression.

Consequences of Rumination

Rumination is associated with several forms of psychopathology. For instance, rumination predicts heightened binge drinking and symptoms of alcohol abuse (Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema & Harrell, 2002). Other studies find that rumination has both an association with anxiety and an ability to predict anxiety (e.g., Ciarrochi et al., 2003; Fresco et al., 2002; Harrington & Blakenship, 2002). However, the vast majority of rumination research focuses on mood and depression symptoms.

Evidence demonstrates that rumination is concurrently associated with depression, that rumination predicts the onset and severity of depression, and when experimentally induced, rumination exacerbates sad mood (e.g., Butler & Nolen-Hoeksema, 1994; Harrington & Blankenship, 2002; Lyubomirsky & Nolen-Hoeksema,

1995; Nolen-Hoeksema & Morrow, 1993; Watkins & Teasdale, 2001). Because rumination has been central in mood and depression research, the relationship warrants a closer examination. Most research into depression and rumination fits into one of three designs: cross-sectional, longitudinal, or experimental.

Numerous cross-sectional studies examined the relationship between rumination and depression. Cross-sectional research can be further divided into three main designs: (1) correlations between rumination and depressive symptoms (e.g., Abela, Vanderbilt, & Rochon, 2004; Harrington & Blankenship, 2002), (2) cross-sectional studies comparing the level of rumination in non-depressed controls and depressed individuals, or the level of depression in ruminators and non-ruminators (e.g., Riso et al., 2003), and (3) studies that conduct both correlation and group difference designs (e.g., Lam, Smith, Checkley, Rijsdijk, & Sham, 2003). In a review of over 100 studies, Thomsen (2006) argued that cross-sectional research points to a positive association between depressive symptoms and rumination when sampling from non-depressed groups. Thomsen's review suggested that a positive, yet weaker, association exists for clinical samples. Additionally, cross-sectional studies found that an association between rumination and depressive symptoms exists in multiple developmental stages, including childhood (Abela, Vanderbilt, & Rochon, 2004) and adolescence (Kuyken, Watkins, Holden, & Cook, 2006). Another important finding from the cross-sectional literature is that rumination may partially explain the greater occurrence of depression in women; several studies found that rumination accounts for part of the association between gender and depression (Grant et al., 2004; Nolen-Hoeksema, Larson, & Grayson, 1999).

Longitudinal studies suggest that rumination predicts symptoms of dysphoria and depression. After accounting for baseline symptoms, multiple studies found that a tendency toward depressive rumination in non-depressed groups predicted depressive symptoms at later times (Abela, Brozina, & Haigh, 2002; Butler & Nolen-Hoeksema, 1994; Hong, 2007; Nolen-Hoeksema, 2000; Nolen-Hoeksema, Stice, Wade, & Bohon, 2007; Verstraeten, Vasey, Raes, & Bijttebier, 2009). Utilizing a broader definition of rumination, repetitive thinking about negative subject matter, also predicted future depression (Ito, Takenaka, & Agari, 2005; Ito, Takenaka, Tomita, & Agari, 2006; Rector & Roger, 1996). The ability of rumination to predict depressive symptoms was also demonstrated in clinical samples (Kuehner & Weber, 1999; Nolen-Hoeksema, 2000; Raes et al., 2006; Rohan, Sigmon, & Dorhofer, 2003).

Experimental studies indicate several negative consequences to inducing rumination-like thinking. Commonly, experimenters will compare a manipulated rumination group (e.g., "think about and concentrate on the meaning of the sentence… I often wonder why I feel the way I do?") and a distraction group that is directed to think about non-emotional content (e.g., ''think about and concentrate on the meaning of the sentence… It would be interesting to visit other countries," Morrow & Nolen-Hoeksema, 1990). Studies applying these procedures in clinical populations demonstrate that rumination groups increase negative mood compared to distraction groups (Lavender & Watkins, 2004; Lyubomirsky & Nolen-Hoeksema, 1995; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993; Watkins & Teasdale, 2001). Moreover, experimental studies demonstrate that individuals who are induced to ruminate have poor

problem-solving skills (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky et al., 1999) and may have reduced motivation. For instance, experimentally induced depressive rumination can reduce engagement in pleasant activities in dysphoric patients. (Lyubomirsky & Nolen-Hoeksema, 1993).

Rumination and Negative Events

Rumination may worsen the detrimental consequences brought on by a single negative event. For example, a ruminative style predicts future depressive symptoms for events such as a natural disaster or the death of a loved one (Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Parker, & Larson, 1994). In addition, the interaction of rumination and negative cognitive styles following a negative life event has been shown to predict the lifetime rate of Major Depressive Disorder (Alloy et al., 2000).

Moberly and Watkins (2008) recently conducted a study to attempt to understand the relationship between rumination, negative life events, and negative affect. In an effort to get unbiased information, the authors utilized experience-sampling methodology, in which participants reported their thoughts and experiences when an alarm on a wrist-worn device sounded. The findings indicated that the more individuals ruminate about everyday stressful events, the more likely they are to experience distress (Moberly & Watkins, 2008).

Whereas a tendency to ruminate seems to have a role in depressive reactions to events, negative events also may increase rumination. Increases in rumination have been linked to interpersonal interactions (Abbot & Rapee, 2004; Rachman, Grüter-Andrew, & Shafran, 2000; Rude et al. 2011) and failure experiences (Watkins, 2004). In addition,

McIntosh and Martin (1992) theorized that when single negative events are taken to be an indication of a more global failure, the events can increase rumination and negative affect. Furthermore, the more important the event is to the individual, the more likely it is to induce rumination (Moberly & Watkins, 2010). Therefore, a ruminative style increases the likelihood that a negative event will lead to depressed mood, but important negative events will also lead to an increase in rumination.

Rumination and Other Factors that Maintain Depression

Rumination increases several other factors that maintain and make one vulnerable to depression. When depressed or dysphoric individuals ruminate, they are more likely to think negatively about events and the future (Lyubomirsky & Nolen-Hoeksema, 1995). Rumination also leads to poorer problem solving abilities and lower self-efficacy for solving problems (Donaldson & Lam, 2004; Gilliam, 2006; Lyubomirsky et al., 1999). Furthermore, ruminators may be less likely to try pleasant activities that might help reduce depression (Lyubomirsky & Nolen-Hoeksema, 1993).

A major focus of current research is the role of rumination in the phenomenon of overgeneral autobiographical memory (OGM). Autobiographical memory is "the aspect of memory that is concerned with the recollection of personally experienced past events" (Williams et al., 2007, p. 122). When asked to recall memories of specific past events, some individuals have a tendency to give general responses (Williams & Broadbent, 1986). Such individuals are said to have an overgeneral autobiographical memory style. OGM predicts the severity and likelihood of future depression (Hermans et al., 2008; Gibbs & Rude, 2004; Sumner et al., 2011; Sumner, Griffith, & Mineka, 2010) and is

associated with delayed recovery from depression (Brittlebank, Scott, Williams, & Ferrier, 1993; Peeters et al., 2002). Researchers theorize that this memory deficit may lead to difficulties with problem solving and planning for the future, which further increases depression vulnerability (for a review see Williams, 2007). Importantly, rumination is believed to be one of the main mechanisms in OGM; when individuals get "captured" in a ruminative cycle, they cannot gain access to specific memories, and thus demonstrate an overgeneral autobiographical memory (Williams, 2007). Consequently, rumination may not only directly increase depression, but may also increase several other risk factors for depression.

Theories of Rumination

Reviews of research in the field point to at least ten theories of rumination (Smith and Alloy, 2009; Watkins, 2008). Some of these focus specifically on rumination regarding depressive symptoms, sadness, or reactions to stressful events (Stress-Reactive Model of Rumination, Alloy et al., 2000; Rumination on Sadness, Conway, Csank, Holm, & Blake, 2000; Ruminative Response Styles Theory, Nolen-Hoeksema, 1991). Other theories are based on broader definitions of rumination, focusing on achievement of life goals or self-regulation (Goal Progress Theory, Martin & Tesser, 2006; Self-Regulatory Executive Functioning, Wells & Matthews, 1996). As Smith and Alloy (2009) argue, the various theories are largely overlapping and can be used to augment each other.

The current review will focus on the two theoretical models most pertinent to present purposes: Goal Progress Theory and Watkins' Level of Construal Theory. In addition, because many other theories have built on the work of Nolen-Hoeksema's

Response Styles Theory (RST, Nolen-Hoeksema, 1991), a basic summary of RST will be given.

Response Styles Theory

The most widely researched theory of rumination is Nolen-Hoeksema's Response Styles Theory (Nolen-Hoeksema, 1991). RST defines rumination as repetitive thinking that focuses on the symptoms, causes, and consequences of negative mood. This theory holds that a ruminative coping style is learned in childhood. Nolen-Hoeksema and colleagues suggest that this learning occurs through modeling by parents (Nolen-Hoeksema, 1991; Nolen-Hoeksema, Mumme, Wolfson, & Guskin, 1995) or because parents act overcritical and controlling (Nolen-Hoeksema et al., 1995). In this conceptualization, rumination becomes a consistent style of responding to depressed mood or to trauma (Nolen-Hoeksema & Davis, 1999; Nolen-Hoeksema et al., 1993). RST suggests that a cyclic effect exists between rumination and depression. According to this hypothesis, negative mood maintains or increases negative thinking, and in turn, negative thinking maintains or increases negative mood. Thus, a vicious cycle exists that sustains depressive symptoms (Nolen-Hoeksema, Stice, Wade, & Bohon, 2007). While there has been a great deal of empirical support for many aspects of RST (Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993; Nolen-Hoeksema et al., 1993), several researchers have suggested that RST may be too restrictive in its definition to encompass all aspects of rumination.

The major criticism of RST theory is that it limits the possible subject of rumination to depressive symptoms and negative mood (Martin & Tesser, 2006; Watkins,

2008). Martin and Tesser (1996) argue that if rumination is a style of thinking, it should not be restricted to specific content areas. For example, individuals may ruminate on the end of a relationship, but not necessarily the fact that they are depressed. Other researchers have also suggested that the content of rumination may not result from depressed mood but rather from negative events (Alloy et al., 2000; Brinker & Dozois, 2009).

A second criticism is that RST is not broad enough to provide a full explanation of research involving levels of abstraction (Watkins, 2008). For instance, research has shown that the consequences of rumination may differ based on whether the content of the rumination is abstract or concrete (Moberly & Watkins, 2006; Rimes & Watkins, 2005; Watkins, 2004; Watkins & Baracaia, 2002; Watkins & Moulds, 2005; Watkins & Teasdale, 2001, 2004). These findings are the basis for the present study and will be discussed in more detail in the upcoming sections. For now it is sufficient to say that Nolen-Hoeksema has acknowledged these findings but has not yet discussed how they could be incorporated into RST theory (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008).

Goal Progress Theory

Martin & Tesser (1989, 1996, 2006) proposed Goal Progress Theory to explain rumination within the Control Theory paradigm. Control Theory purports that people self-regulate behavior, including mental activities, through a feedback loop. Within this loop, present actions and states are compared to salient goals or values. Control Theory holds that people alter their behavior and mental activity to reduce discrepancies between

their current state and desired values, goals, or outcomes (Carver & Scheier, 1981, 1990). At any one time, individuals will be engaged in achieving multiple goals (Martin & Tesser, 2006).

Control Theory suggests that goals fall along a hierarchy with the top levels in the hierarchy guiding the lower levels. At the top of the hierarchy are very abstract concepts, such as the person's ideal-self, or a vague conceptualization of who the person aspires to be. The next level of reference values is *principles*. Carver and Scheier (1990) state, "principles are probably the most abstract aspects of behavior that have names in everyday language—for example, honesty and responsibility. Principles are not specifications of acts but of qualities that can be manifest in many acts (p. 20)." The levels below principles contain specific behavior scripts for acting in line with the more abstract principles. In addition, higher-level goals (e.g., being honest) are more abstract and occur across situations (Carver & Scheier, 1990). Lower-level goals (e.g., telling the truth in a given situation) represent specific actions or behaviors. Higher-level goals are beneficial in that they direct behavior in a consistent way, increase motivation, and reduce impulsivity (Carver & Scheier, 1998; Vallacher & Wegner, 1987, 1989). Lower-level goals are important in that they provide details of how to carry out the higher-level goals to which they connect. Carver and Scheier (1990) propose that there are meta-control processes in place that monitor overall progress at all levels of the hierarchy.

It is helpful to look at an example of how the goal hierarchy might function in actual practice. Figure 1 illustrates a possible hierarchy, which may be active when a young man drives to a friend's house to return class notes that he borrowed.

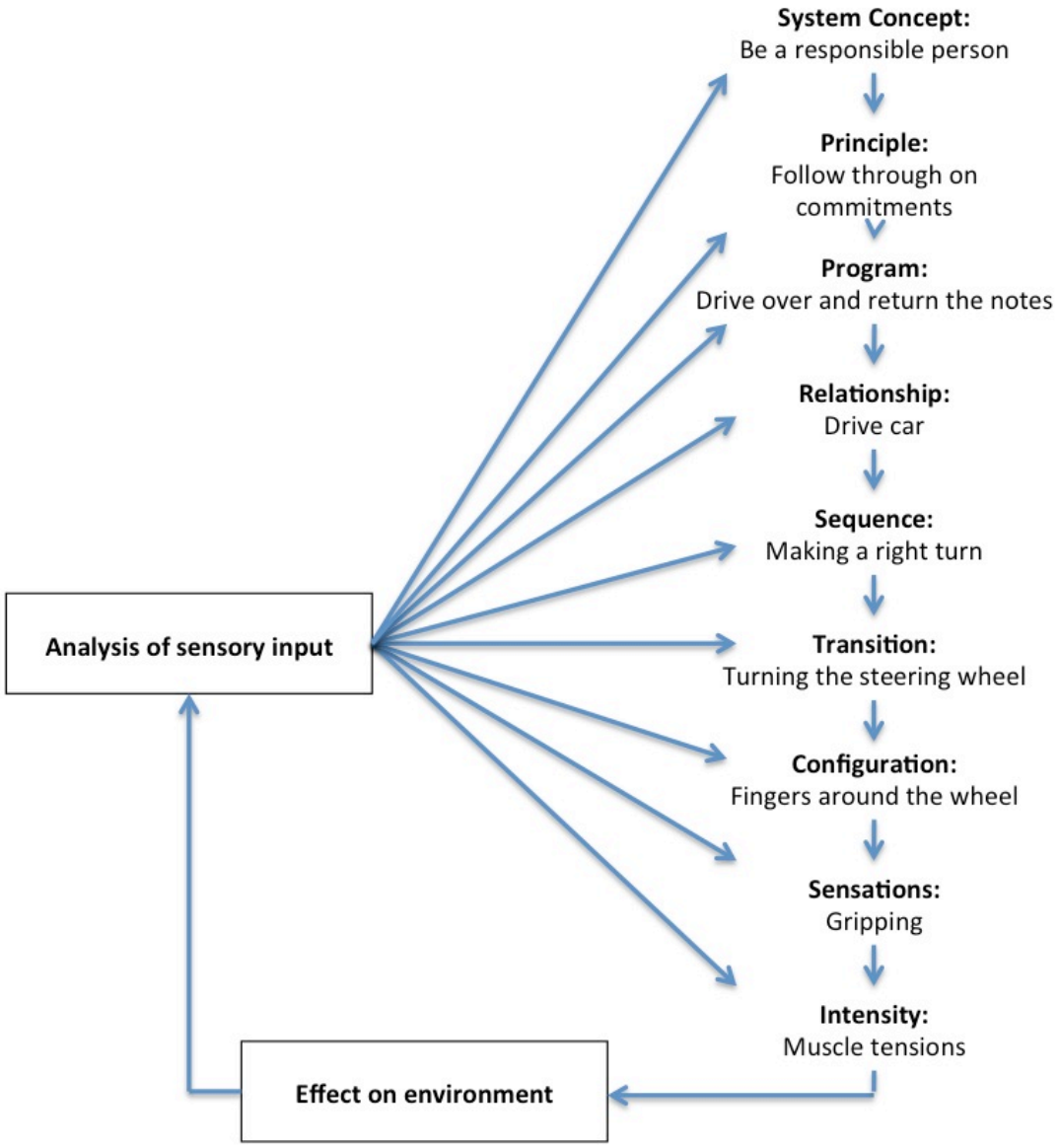

Figure 1. An example of a goal hierarchy. The behavior, which is described more fully in the text, is that of a young man making a turn while driving to a friend's house to return class notes he borrowed. [Adapted from Carver & Scheier, 1982.]

In this goal hierarchy, the highest-level goal that is salient is "being a responsible person." Recall that the higher the level of the goal the more important and more enduring the goal is. Therefore, "being a responsible person" is a consistent goal that will remain throughout many different situations in this man's life. In addition, as one moves down the hierarchy, goals become more concrete and provide the means to accomplish the goal above them. For example, the man wants to "be a responsible person," which is accomplished by "following through on commitments," which is in turn accomplished by "driving over to his friend's house," and so on. Whereas lower-level goals provide the means to complete higher-level goals, higher-level goals provide the reasons for lower-level goals. For example, the man's reason for putting his "fingers around the wheel" is to "turn the wheel." The lower-level goals are very concrete and short lived. It may take several lower-level actions to complete a higher-level task. For example, to drive over to the friend's house, the individual may need to make several turns. At each moment, a comparison is made to check for a decrease in the discrepancy between the person's present state and the various goals in the hierarchy. However, problems may arise when progress toward higher-level goals is not made.

Goal Progress Theory and Rumination

Within the Goal Progress Theory literature, rumination is defined as "a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts'' (Martin & Tesser, 1996, p. 7). Rumination arises when people are repeatedly thwarted or fail to progress toward important higher-level goals. To escape from the ruminative cycle,

individuals must disengage from the goal, find a substitute means of achieving it, or resume progress toward it (Martin & Tesser, 2006).

Evidence suggests that when a goal is thwarted, information pertaining to that goal becomes highly accessible. Early support for this phenomenon comes from the work of Zeigarnik (1938) who hypothesized that needs cause tensions. Ziegarnik had subjects complete some tasks and leave others incomplete. She found that information pertaining to a task left incomplete was more likely to remain active in memory (Zeigarnik, 1938).

More recently, Rothermund (2003) designed an experiment to test whether the tendency for unfinished tasks to remain active was automatic. First, participants chose words in a synonym-matching task, and received both positive and negative feedback on trials regardless of performance. In the second part of the experiment, participants had to name a word surrounded by two distracter words. The distracter words were selected from the earlier synonym task. When the distracters were from trials where the participant had previously received negative feedback, the reaction time of the participant was increased. Thus, Rothermund concluded that participants were more vigilant to failures, because the failure words captured attention even when the task required attention elsewhere. Martin and Tesser (2006) argue that this is directly related to the rumination that occurs following failure in goal progress. In fact, Goal Progress Theory proposes that the more important the goal, the more likely rumination is to occur (Martin & Tesser, 2006). For example, Lavallee and Campbell (1995) had participants keep a diary for two weeks, recording the most bothersome event each day. When the events

were goal relevant and personally important, they were associated with higher levels of rumination. Watkins has recently found similar results (Moberly & Watkins, 2010).

Escaping Rumination

According to Goal Progress Theory, disengaging from a frustrated goal is an effective, but difficult to achieve, means to lower rumination (Martin & Tesser 2006; Wrosch, Miller, Scheier, & de Pontet, 2007). Certain goals may be personally important but unlikely or impossible to fulfill (e.g., the desire to be a star quarterback after tearing an ACL). In situations like this, disengaging from the goal is essential. Research deonstrates that individuals who were able to disengage from goals that they were not actively progressing toward and who adopted new goals had lower rumination (Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). This process may be more effective in individuals with greater well-being (Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Martin and Tesser (2006) argue that the multiple goals pursued by an individual at one time are in balance. Although the current configuration of goals may not be the ideal state, disengaging from a goal requires initially unbalancing the current mix of goals; therefore, the individual may temporarily feel purposeless. Thus, disengaging from a goal is difficult. Martin and Tesser (2006) suggest that disengagement from old goals and engagement in other goals may result more easily during trauma and/or brushes with death. In summation, research seems to demonstrate that disengaging from thwarted goals leads to a reduction in rumination. However, the procedure by which individuals accomplish disengagement is still unknown and is most likely a difficult process.

Perhaps, an easier way to end a ruminative cycle would be to find alternate low-level goals that accomplish a higher-level goal. For example, imagine an individual who had a goal of helping other people by joining the Peace Corps. If the application to the Peace Corps is denied, the individual might be able to find an alternate means of fulfilling the higher-level goal of helping other people. For instance, the individual could spend a year working in soup kitchens, and rumination could be prevented. One study asked college freshmen to identify the person they were closest to before coming to college and list activities that they engaged in together. The freshmen then listed the activities for which they found substitutes at college. Findings indicated that freshmen who were able to find substitute activities ruminated less about the person they had left behind (K. Millar, Tesser, & M. Millar, 1988). In a separate study, Koole et al. (1999) were interested in the various ways participants fulfilled the higher-level goal of self-worth. The study provided participants with failure feedback on a bogus intelligence test. Following the feedback, participants reported increased levels of rumination. The researchers hypothesized that this rumination was connected to the thwarting of the higher-level goal of self-worth. To test this hypothesis, they allowed some participants to affirm values important to their self-worth. Results indicated that participants who were allowed to affirm their self-worth had content pertaining to intelligence tests less accessible. In other words, when a substitute means of fulfilling the higher goal of self-worth was found, rumination about the failure experience was reduced.

This begs the question, what hinders the discovery of alternative lower-level goals that fulfill the higher-order goal? One possible answer is that individuals may fixate on a

certain lower-level goal as the only way of achieving a higher goal. Building on this basic premise, McIntosh and Martin (1992) proposed the goal linkage model, which holds that people who link specific lower-level goals to the higher-level goal of happiness will have an increased rate of rumination. In their research, McIntosh and Martin compared linkers, individuals who believe happiness is contingent on fulfillment of certain goals, to non-linkers, individuals who do not see goal completion as necessary for happiness (McIntosh, Martin, & Jones, 2001). Findings indicated that linkers generally have higher rates of unhappiness (McIntosh and Martin, 1992) and depression (McIntosh, Harlow, & Martin, 1995). Additionally, these higher rates of negative affect are largely accounted for by the increase in rumination of individuals who linked lower and higher goals (Martin & Tesser, 1996; McIntosh, Harlow, & Martin, 1995; McIntosh and Martin, 1992; McIntosh, Martin, & Jones, 2001). Brothers and Madux (2003) applied the linkage model in an attempt to understand why certain infertile women experience more distress than others. Using survey methods, Brothers and Maddux asked participants who had attempted unsuccessfully to have a child for the last year to complete measures on linking (e.g., "Having a biological child is essential to my happiness"), emotional distress, and rumination. Results indicated that linking predicted rumination. Furthermore, rumination predicted emotional distress. Rumination mediated the connection between linking and emotional distress. Moreover, McIntosh and Martin's research on linking is in line with Goal Progress Theory's conception of rumination.

In summary, Goal Progress Theory explains several important aspects of rumination. Within this theory, rumination results when individuals cannot make progress

toward reducing the discrepancy between their current state and their goals. Research has demonstrated that thwarting goals increases the accessibility of information pertaining to that goal. In addition, the more important the goal, the more likely rumination is to occur. One effective but difficult way to halt rumination is to disengage from a goal. Finding an alternative way to satisfy the goal can also reduce rumination. However, this may be problematic if the individual only sees specific ways of fulfilling a goal.

Watkins' Level of Construal Theory

Level of Construal Theory proposes that key in the development and formation of rumination is the degree of abstraction present when perceiving negative events. Watkins makes a distinction between two ways of perceiving events during processing: high-level, abstract construals and low-level, concrete construals. Though his definitions have gone through several iterations, recently, Watkins described abstract construals as "general, superordinate, and decontextualized mental representations that convey the essential gist and meaning of events and actions, such as inferences of global traits that are invariant across different situations" or "representations of 'why' an action is performed and of its ends and consequences." Concrete construals are "lower-level mental representations that include subordinate, contextual, and incidental details of events and actions, such as inferences of situation-specific states" or "representations of the specific 'how' details of an action and of the means to an end" (Watkins, Baeyens, & Read, 2009, p. 56). Watkins proposed that thinking of abstract construals is related to rumination (Watkins, 2008). Furthermore, Watkins suggested that helping individuals to think and process information

in a concrete way will reduce rumination and alleviate depressed mood (Watkins, 2008). On these premises, Watkins and colleagues developed an extensive research program.

Evidence for Level of Construal Theory

Initially, Watkins' work grew out of the research of Teasdale (1999) who found that mindful, experiential self-focus on emotional material facilitates processing. As a next step in researching these phenomena, Watkins conducted several studies that compared an experiential mode of processing (depending on the study, this mode was also called low analysis or concrete) with an abstract mode of processing (also called analytic, high analysis, conceptual-evaluative, or abstract-evaluative) and examined the effect on rumination and depression (Moberly & Watkins, 2006; Raes, Watkins, Williams, & Hermans, 2008; Rimes & Watkins, 2005; Watkins, 2004; Watkins, Moberly, & Moulds, 2008; Watkins & Moulds, 2005; Watkins & Teasdale, 2001, 2004).

The first such study researched the effects of encouraging ruminative-like thinking from two levels of abstraction and two levels of self-focus (Watkins & Teasdale, 2001). Overgeneral autobiographical memory and depression were examined as outcomes. The study explored four conditions by asking participants to read several statements from a particular perspective: think about the meaning of several rumination statements (e.g., "Think about what your feelings might mean"; high analysis/ high self-focus), focus their attention on the experience of several rumination statements (e.g., "Focus your attention on the experience of the physical sensations in your body"; low analysis/ high self-focus), focus their attention on distraction statements (e.g., "Think about a raindrop sliding down a pane of glass"; low analysis/ low self-focus), or think

about abstract and philosophical items (e.g., "Think about trying to understand the world you live in"; high analysis/low self-focus). Results indicated that the high-analysis/high self-focus condition increased overgeneral autobiographical memory, a phenomenon related to rumination, but not depressive symptoms. The authors concluded that analytic self-focus may be a key component to rumination.

A follow up study added some corroborative evidence. Watkins (2004) induced a failure experience and, subsequently, asked participants either a conceptual-evaluative question (i.e., ‘‘Why did you feel this way?”) or an experiential question (i.e., “How did you feel moment-by-moment?’’). Results indicated that participants in the conceptual-evaluative condition had more intrusive thoughts about the failure than the experiential group (Watkins, 2004). Watkins and colleagues connected these findings to a parallel string of research and suggested that conceptual-evaluative self-focus might map onto higher levels of construal and be an active process in rumination.

Subsequent studies built on the premise that a high level of construal is a key feature of rumination and examined how this perspective affects several correlates of rumination. Rimes and Watkins (2005) found that inducing participants to think from a highly analytic perspective increased ratings of self-worthlessness. In this study, Watkins compared an analytic self-focus condition with an experiential self-focus condition. Participants were asked to examine statements, which were based on Nolen-Hoeksema and Marrow’s (1993) rumination tasks. Instructions for the analytic self-focus condition asked participants to think about the causes, meanings, and consequences of each symptom/sensation, whereas the instructions for the experiential self-focus condition

emphasized focusing one's attention on the experience of each symptom/sensation. Findings indicated that for depressed individuals, the analytic condition increased self-judgments of worthlessness and increased levels of depression. This was not found for participants who were not currently depressed.

Another study examined the effect of level of construal and trait rumination on affect. Moberly and Watkins (2006) asked student volunteers to write about positive or negative scenarios from either a concrete condition (e.g., "Imagine the details of what is happening in each scenario") or an abstract- evaluative condition (e.g., "Think about the causes, meanings, and implications of each situation"). When this expressive writing task was followed by a failure task, construal level moderated the relationship between rumination and negative affect. The results demonstrated that high-trait ruminators had a reduced positive affect, but only in the abstract-evaluative group (Moberly & Watkins, 2006).

In a similar study, Watkins and colleagues tested the impact of abstract-evaluative thinking on emotional reactivity to negative events (Watkins, Moberly, & Moulds, 2008). Importantly, in this study the abstract-evaluative thinking condition was called the depressive rumination condition. This indicates that at this point Watkins and colleagues were beginning to equate the two. The study used a mixed student and community sample and included three experiments that induced abstract-evaluative thinking. The first two experiments used the same induction from the aforementioned study (Moberly & Watkins, 2006) in which scenarios were given to participants, and they were asked to think about them from either "a mode inducing depressive rumination" (the same as the

previous study's abstract-evaluative condition) or "a mode antithetical to depressive rumination" (the same as the previous study's concrete condition). The third experiment induced the "depressive rumination" by using an interpretive bias training in which participants read 64 descriptions. Each description had a letter missing in the last word. Participants were asked to fill in the missing letter revealing a word that either encouraged abstract thinking (e.g., "Cleaning up the mess, you feel irritated because you are so careless") or concrete thinking (e.g., "Cleaning up the mess, you feel irritated because you are so wet"). Following the induction of processing mode, participants in each experiment were asked take part in a failure task that had previously been shown to induce negative mood. Results in all three experiments indicated that participants in the "antithetical to depressive rumination" condition (i.e., concrete condition) had less emotional reactivity to a failure task, as measured by less negative affect, compared to the depressive rumination condition (i.e., abstract-evaluative mode; Watkins, Moberly, & Moulds, 2008). Based on these findings, Watkins and colleagues concluded that abstract construals were an important part of maintaining rumination.

The Benefits of Focusing on the Specifics: Concreteness Training

Watkins theorized that if high-level, abstract processing is related to rumination, low-level, concrete processing may break the ruminative cycle (Watkins, 2008). Based on this theory, Watkins implemented a concreteness-training program with a dysphoric, clinical population (Watkins, Baeyens, & Read, 2009). Participants were divided into a concreteness group, a bogus concreteness group, or a waiting list control. In both the concreteness and bogus concreteness groups, participants met with experimenters for an

initial two hour session. For the week following the initial session, participants spent 30 minutes a day practicing a specific activity. During the initial training, the concreteness-training group was guided in a relaxation exercise and then asked to think about six different scenarios. Three of the scenarios were fabricated negative situations whereas the other three were specific situations generated from the participants' memories. Through guided imagery and direct questioning, the researchers encouraged thinking about the situations by: "(a) focusing on sensory details in the moment (e.g., questions asking participants to focus on and describe what they could see, hear, feel); (b) noticing what is specific and distinctive about the context of the event; (c) noticing the process of how events and behaviors unfold (e.g., 'imagine a movie of how events unfolded'); (d) generating detailed step-by-step plans of how to proceed from here" (Watkins, Baeyens, & Read, 2009, p. 57). Following the initial session participants were given a recording of the training and asked to listen and journal for 30 minutes each day for the next week. Individuals in the bogus concreteness training condition received a similar amount of face-to-face interaction but completed the previously mentioned induction task, where they were asked to fill in a missing letter in the last word of the scenario (Watkins, Moberly, & Moulds, 2008). Words were selected to complete the scenario from a concrete perspective. Participants were also asked to imagine the scenario as vividly as possible. Results were mixed. In examining depressive symptoms, the concreteness group fared better than the bogus concreteness training in terms of a structured diagnostic interview. This was not the case for other outcome measures of depression and rumination, such as the Beck Depressive Inventory (Beck, Steer, & Brown, 1996) and

Nolen-Hoeksema's Ruminative Styles Questionnaire (Nolen-Hoeksema & Morrow, 1991). Still, the concreteness training group demonstrated greater improvement than the waiting list control group on both measures of depression and rumination (Watkins et al., 2009).

In a second study, Watkins and Moberly (2009) compared a similar concreteness training condition to a relaxation condition. In both conditions, participants listened to an audio recording for seven days, which reinforced the training. The concreteness training condition resulted in a significantly greater reduction in depression symptoms and marginally significant improvement in rumination symptoms ($p = .06$) compared to the relaxation training. Thus, the use of concreteness training has exhibited some promise as a possible treatment for rumination.

Recently, Watkins (2008) attempted to integrate the previous literature on rumination. He identified three factors that might determine whether repetitive thought leads to helpful or harmful consequences: (1) valance of the thought content (i.e., negative or positive), (2) intrapersonal context (e.g., self-esteem), and (3) the level of construal. Watkins examined several theories that could explain these factors. He argued that Ruminative Styles Theory (Nolen-Hoeksema, 1991) and Cognitive Theories (e.g., Greenberg, 1995; Horowitz, 1985; Janoff-Bulman, 1992; Teasdale & Barnard, 1993) did a fairly good job of accounting for valance and context but could not completely address his recent work on level of construal. Watkins (2008) contends that Control Theory (Carver & Scheier, 1981, 1990), particularly the work of Martin and Tesser (1989), provides the fullest explanation of all three variables. In an attempt at integration,

Watkins proposed that a level of construal maps directly onto a position in the goal hierarchy; high-level, abstract construals correspond to high-level goals/values and low-level, concrete construals correspond to low-levels of the goal hierarchy (Watkins, 2008). He has proposed that when individuals are depressed and experience negative events, they become stuck at the abstract level, which influences repetitive thought and worsens depressive symptomatology (Watkins, 2011).

Empirical Evidence for Benefits of Abstract Thought

Whereas Watkins' Level of Construal Theory holds that adopting abstract thinking in reference to negative content maintains a ruminative cycle, several researchers have found that abstract processing is not always detrimental (Kross & Ayduk, 2008; Rude et al., 2009). In fact, some experimental studies have demonstrated that abstract thought about negative consequences does not always increase rumination, and may, reduce it.

Early evidence that abstract processing might not always be akin to rumination comes from the work of Hunt. Hunt (1998) was interested in emotional processing and how to cope with dysphoria following a negative life event. She conducted a study which asked participants to write from one of three perspectives following negative feedback on an IQ test: emotional processing (e.g., "focus on how you feel," p. 365), disputation (e.g., "question whether these test results have any relevance," p. 365), or distraction (e.g., "write… about your favorite television show," p. 366). Of note, although the emotional processing condition had a strong concrete experiential component, it also asked participants to think about the implications of the test results and the causes of the poor

performance. This latter piece resembles Watkins' analytic induction (e.g., Moberly and Watkins, 2006). Thus, the emotional processing condition seems to be a mixture of both abstract and concrete thinking. Yet the following day, those in the emotional processing condition reported improved mood. The implication of this study is that focusing on negative content from a mixed perspective does not necessarily lead to rumination and depression.

More recently, Kross, Ayduk, and Mischel (2005) investigated the level of construal (abstract "why" vs. concrete "what") and the type of self-perspective adopted (self-immersed vs. self-distanced). They conducted a study that asked participants to recall a bothersome interpersonal event and, subsequently, adopt a perspective based on two dimensions: level of immersion and level of construal. Immersion consisted of a self-immersed condition (e.g., ''go back to the time and place of the experience and relive the situation as if it were happening to you all over again,'' p. 711) and a self-distanced condition (e.g., ''take a few steps back and move away from your experience… watch the conflict unfold as if it were happening all over again to the distant you,'' p. 711). For the second factor, level of construal, participants either thought about the feelings and sensations in the concrete "what" condition or the reasons underlying their feelings in the abstract "why" condition. The findings indicated that a distanced, abstract "why" perspective was more beneficial in reducing negative affect than the other groups (Kross & Ayduk, 2005).

This line of research indicates that abstract thought, possibly in combination with specific thought, can be beneficial. The analytic distanced perspective in this study

clearly maps onto higher-levels of goal processing by asking participants to examine the reasons underlying their feelings. However, there also seems to be a concrete level of processing present. Although the distanced perspective asks individuals to step back from their experiences, it also asks them to "watch the conflict unfold as if it were happening all over again to the distant you." In so doing, the individual recalling the experience will need to think at a relatively concrete level to recall actions, feelings, and sensations in the memory. In contrast, a purely abstract condition would ask participants to simply recall the general meaning of the event without stepping through the details. Therefore, the distanced analytic perspective seems to move participants back and forth between abstract and concrete levels of processing. As the study demonstrated that this distanced analytic condition was the most beneficial perspective, it suggests that combining abstract and concrete thought can be a useful tool in improving mood, and most likely rumination. Kross and Ayduk have since conducted several more studies and in recent reviews, the authors argue that their research demonstrates that the distanced analytic condition is useful in reducing rumination as well as negative affect (Ayduk & Kross, 2010; Kross & Ayduk, 2011).

Further support for the possible benefits of some types of higher-level, abstract processing comes from the work of Rude et al. (2011). Rude and colleagues have suggested that a key component to the harmful effects of rumination is negative evaluation (Rude, Maestas, & Neff, 2007). Building on this premise, Rude et al. (2011) examined the conditions in the Watkins experiments and concluded that the abstract condition may be confounded with self-judgment and evaluation. They suggested that in

some of Watkins experiments this has been explicit, such as examining a romantic break up and asking participants to think ("At that moment, you stare at the table and contemplate your empty…") from either a concrete- experiential ("glass") or an abstract-evaluative way ("life") (Watkins, Moberly, and Moulds, 2008, p. 371). At other times, the evaluation may have been implicit, such as asking participants to "write about what reasons might have caused you to perform as you did" following a failure task (Watkins, 2004, p. 1043).

To test their hypothesis that the harmful effects of abstract thinking may result from evaluation, Rude et al. (2011) attempted to experimentally separate the level of construal and evaluative dimensions. The study asked participants to recall a rejection experience and then write from one of three perspectives: abstract-evaluative (e.g., "Why do you think this happened?"), abstract-contextual (e.g., "How do you think you will view this event in 1 to 2 years?"), concrete-experiential (e.g., "As you recall the event, what physical sensations do you experience in your body?"). Additionally, the study included a non-writing control condition. The findings indicated that the abstract-contextual conditions showed a reduction in rumination over the no writing control and the abstract-evaluative condition. The abstract-evaluative condition did not show a significant difference from the control conditions. The findings also indicated that the concrete-experiential condition experienced less rumination than the no writing control. Therefore, the results from this study corroborated Watkins' contention that concrete processing decreases rumination, but also differ from Watkins in that the results suggested that certain types of abstract processing also decrease rumination.

Possible Benefits of Combining Abstract and Concrete Thought

Based on the literature reviewed thus far, it is apparent that there is a discrepancy in the field. Watkins and colleagues (2008) argue that abstract processing increases rumination when examining negative content. On the other hand, several empirical studies suggest some types of abstract thought are beneficial in reducing rumination (e.g., Rude et al., 2011). More research is needed to help clarify whether abstract thought has a beneficial or detrimental effect on rumination and mood levels. In addition, no study has explicitly examined the effects of mixing beneficial abstract thought and concrete thought when examining negative content. An interest of this study was to explore whether including abstract thought in interventions would be beneficial or harmful to rumination outcomes. In order to examine this interest, an exploration of values was selected as a type of abstract processing that might reduce rumination when combined with concrete processing.

This next section outlines the theoretical basis for utilizing a mixed intervention. First, arguments from Control Theory are presented that suggest a focus on the abstract improves consistency across a variety of situations, encourages personal meaning, and directs concrete action (Carver & Scheier, 1998). Next, examples of beneficial types of abstract and concrete thought used in various psychotherapies are examined. Finally, possible beneficial mechanisms of combining an exploration of abstract values with concrete thought are discussed.

Theoretical Benefits of a Mixed Perspective from Control Theory

Control Theory (Carver and Scheier, 1990) provides a theoretical basis for understanding the benefits of combining the abstract and the concrete levels of thought. Recall that Control Theory purports that people self-regulate behavior, including mental activities, through a feedback loop. Within this loop, present actions and states are compared to salient goals or values. When a present state does not match the individual's values, the individual acts in a way to reduce the discrepancy. Subsequently, the new current state is checked against reference values, thus completing the loop. In addition, recall that reference values fall along a hierarchy. The top levels in the hierarchy guide the lower levels. The lower levels contain specific behavior scripts for acting in line with the more abstract principles.

Based on this model, we can theorize several benefits to focusing on the abstract level in conjunction with the concrete level. Control Theory posits that higher-level, abstract values are consistent across situations, encourage personal meaning, and ensure that lower-level actions remain directed toward what is important (Carver & Scheier, 1998). Without some attention to higher-level abstract values, people would lack consistency. Research indicates that individuals who think about the larger meaning of their actions are more organized, whereas concrete processing has been associated with more impulsivity (Vallacher & Wegner, 1989). For instance, Wegner et al. (1986) measured the level of detail present in participants' descriptions of their behaviors and provided bogus personality feedback. Individuals who concentrated on the details were more suggestible to the feedback and subsequently acted more in line with the feedback

than individuals who thought at a more abstract, conceptual level. This study highlights that abstract perspectives provide greater continuity.

Abstract values and goals are also important for organizing meaningful action. Recall that Goal Progress Theory, a form of Control Theory, describes rumination as resulting when an individual perceives an experience as thwarting progress toward an important higher-level goal (Martin and Tesser, 2006). Furthermore, an individual can escape rumination by resuming progress toward, disengaging from, or finding alternate means for achieving a particular higher-level goal or value (K. Millar, Tesser, & M. Millar, 1988). Carver and Scheier (1998) suggest that more connections between the multiple levels of the hierarchy and greater flexibility in perspective are desired when dealing with problematic situations. This allows for the discovery of more ways to achieve one's goals and facilitates organized action. Consequently, an explicit focus on abstract values, combined with an alternative concrete means to achieve them, might enable the resumption of goal progress, and thereby, reduce rumination.

Examples of Benefits of a Mixed Perspective from Clinical Theories

Many forms of psychotherapy utilize abstract thought to target rumination and depression. An examination of all the various psychotherapy theories is beyond the scope of this study. However, a brief inspection of a few clinical theories may provide examples of types of abstract thinking that are beneficial when used with concrete thought.

Abstract thought used in clinical practice may take the form of increasing understanding, searching for meaning, or clarifying values. Psychoanalytic theories have long emphasized understanding the unconscious processes that are affecting a client's

life. This understanding often asks clients to make connections at an abstract level, such as examining defenses, internalized objects, or repetition of relationship patterns (Ainslie, 2007). Therapies can also be more explicit in their direction toward abstraction. For example, existential therapists believe that it is beneficial to help clients face big picture questions and to explore meaning (e.g., Logotherapy, Frankl, 1992; Existential Psychotherapy, Yalom, 1980). Even cognitive therapy, with its emphasis on specific thoughts and feelings, delves into more abstract concepts such as core beliefs (Beck, 2002). In fact, some cognitive theorists believe that an ability to use abstraction allows clients to see the underlying context of events, thus reducing rumination (James, Reichelt, Carlsonn, & McAnaney, 2008). Therefore, most theories combine some level of abstract level thinking with concrete thinking in order to understanding events and thoughts.

One type of abstract thought that holds promise for use in the present study is an exploration of values. Many theories purport that discovering abstract values and living in accordance with them has a therapeutic effect. In Motivational Interviewing (MI; Miller & Rollnick, 2002), a client-centered therapy, clients are encouraged to examine their current choices in comparison to all their values. Helping clients examine abstract values allows them to make choices that will reduce discrepancy and improve overall well-being (Wagner & Sanchez, 2002). Frankl (1992), speaking from an existential perspective, describes values as providing meaning and purpose. Frankl contended that when armed with this meaning, an individual could endure any of life's hardships (Frankl, 1992). More recently, Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, &Wilson, 1999) suggests the concept of *valued living*, or "verbally construed

global desired life consequences" (p.206). Within this theory, discovering one's values and living in accordance with them is key to reducing psychological distress. Of note, with perhaps the exception of Frankl's existential perspective, these examples use abstract values to guide concrete actions. Therefore, these theories ask individuals to traverse the goal hierarchy and employ a mixture of concrete and abstract thought.

Possible Beneficial Mechanisms of a Mixed Perspective

Combining an exploration of abstract values with concrete processing could theoretically decrease rumination through several mechanisms. An exploration of values was selected as a possible type of beneficial abstract thought because it maps directly onto the higher levels of the goal hierarchy and is believed to have therapeutic value. In fact, the values exploration task used in this study was adapted from several clinical theories including Dialectical Behavioral Therapy and Acceptance and Commitment Therapy (Davidov, Schmidt, & Schwartz, 2008; ACT, Hayes, Strosahl, & Wilson, 1999; Linehan, 1993, 2010). Appendix A.7 displays the actual list of values that participants were asked to explore in terms of a negative event. Recall that Carver and Scheier (1990) label the highest level of the hierarchy as principles, which "are not specifications of acts but of qualities that can be manifested in many acts," such as "honesty and responsibility" (p. 20). The values that participants were asked to explore in the present study, such as "spirituality," "achievement," and "connection with others," were clearly in line with these more abstract, higher levels of thinking. Thus, we can be certain that the intervention is reaching the abstract, higher levels.

One way that exploring values may reduce rumination is by increasing goal organization and helping people live more in terms of their values. Control Theory (Carver and Scheier, 1990) suggests that abstract thought guides lower-level actions, reduces impulsivity, and provides consistency (Vallacher & Wegner, 1989; Carver & Scheier, 1998). Therefore, an explicit knowledge of which higher-level values are thwarted, may allow an individual mired in rumination and depression to organize concrete actions toward the higher-level goal. Furthermore, moving between abstract and concrete levels could make connections between higher-level goals/values and concrete actions more salient. As a result, alternative means of achieving important goals/values might be more accessible. Several studies demonstrate that finding alternative ways to fulfill abstract goals reduces rumination (Koole et al. 1999; Martin & Tesser, 2006; K. Millar, Tesser, & M. Millar, 1988). Consequently, an exploration of values may help people act more consistently with their higher-level goals and values, and thereby, reduce rumination.

Another way in which combining abstract values with concrete thought might reduce rumination is through encouraging greater personal meaning. According to Control Theory, abstract goals by definition are more important than concrete goals (Carver & Scheier, 1998). Therefore, explicitly connecting concrete actions to abstract values may increase the importance of actions and thus increase meaning. Greater personal meaning is associated with lower levels of rumination (Michael & Snyder, 2005) and lower levels of depression (Mascaro & Rosen, 2008; Westerhof, Bohlmeijer, van Beljouw, & Pot, 2010).

Although rumination and meaning-making appear related, the exact nature of the relationship is unclear. For example, Michael & Snyder (2005) surveyed 158 college students who had experienced the death of a loved one. They discovered that rumination mediated the relationship between meaning-making and well-being, indicating that rumination might explain the extent to which people can make sense of negative events. On the other hand, Kross and Ayduk (2011) contend that their self-distanced conditions work because it facilitates meaning, which in turn reduces rumination. It is possible that the constructs have a reciprocal relationship – rumination may inhibit the ability to make meaning out of negative experiences, but the inability to find meaning may also increase rumination about a negative experience.

Finally, the degree of negative self-judgment may help explain the beneficial aspects of mixing an exploration of abstract values with concrete processing. Recall that Rude et al. (2011) compared four conditions: abstract-evaluative, abstract-contextual, concrete-experiential, and control conditions. Their findings indicated that participants in the abstract-contextual condition had a greater reduction in rumination than the abstract-evaluative and the control condition. The authors argued that, by helping participants adopt a broader perspective, self-judgment was reduced in the abstract-contextual condition, which in turn decreased the level of rumination. An exploration of values may also be a form of abstract thinking that can help individuals understand negative events in a broader context.

In summary, an exploration of values combined with concrete processing may be a helpful perspective in reducing rumination by (1) using values to organize concrete thoughts and actions, (2) enhancing meaning, and (3) reducing negative self-judgment.

Study Aims and Hypotheses

Two decades of research suggest that rumination has a significant role in the vulnerability to, and prediction of, depression. As such, researchers target rumination as a possible means to prevent and reduce depression. Recent evidence demonstrates that interventions that encourage thinking at a concrete level reduce rumination. However, theory, research, and clinical practice suggest there may be types of abstract thought that are beneficial. This study investigated whether combining abstract thinking with concrete thinking would reduce rumination or exacerbate it.

Participants were asked to examine negative events in their lives from one of three perspectives: 1) concrete, 2) mixed, or 3) control. As a combination of abstract and specific thought has not yet explicitly been explored, this study included a mixed condition that asked clients to examine abstract values and connect them with specific actions. This study also included a concrete condition, which was based on Watkins' concreteness training (Watkins, Baeyens, & Read, 2009). Finally, a control condition was included, which referenced negative events but did not encourage the adoption of a particular perspective.

Study Aim 1

The first aim of this study was to evaluate the effects of the conditions on rumination, overgeneral autobiographical memory, and depression. Previous studies

found that concrete conditions outperform control conditions in decreasing rumination (Moberly & Watkins, 2006; Rude et al., 2009; Watkins, Baeyens, & Read, 2009). Therefore, a similar pattern was expected in this study. The mixed condition was hypothesized to have the benefits of the concrete condition and also the benefits of non-evaluative abstract thought. In addition, the mixed condition was hypothesized to have more organized connections between the levels of the goal hierarchy. Therefore, the mixed condition was expected to demonstrate a greater reduction in rumination than both the concrete and control conditions. Participants completed measures of rumination, OGM, and depression immediately before receiving the intervention (Time 1), post-intervention (Time 2), and at a month follow-up (Time 3).

Hypothesis 1a: Effects of the Intervention on Rumination, OGM, and Depression

Participants in the mixed condition will display decreased rumination, OGM, and depression at post-intervention (Time 2) and at follow up (Time 3) compared to participants in the concrete and control conditions.

Hypothesis 1b: Effects of the Intervention on Rumination, OGM, and Depression

Participants in the concrete condition will display decreased rumination, OGM, and depression post-intervention (Time 2) and at follow up (Time 3) compared to participants in the control conditions.

Study Aim 2

The second aim of the study explored which mechanisms of abstract thought are beneficial in reducing rumination. It was suggested that one of the possible beneficial factors of the mixed condition could be to link abstract goals/values with specific actions.

Recently, Wilson et al. (2010) investigated a similar construct, called valued-living. They developed the Valued-Living Questionnaire, which was designed to evaluate the extent to which people live consistently with their values. This measure was used to operationalize the extent to which participants' actions match the abstract values they discuss. In addition, it was theorized that abstract thought that creates greater personal meaning would reduce rumination. Consequently, the Meaning Making Scale, a measure examining the amount of meaning generated from negative events, was administered. Finally, lowering negative self-judgment was considered by Rude et al. (2011) to be a factor that helped decrease rumination. Thus, the KIMS, which measures self-judgment about negative events, was administered as well.

Hypothesis 2: The Mediation by Valued-living, Meaning, and Self-Judgment.

Valued-living, personal meaning, and self-judgment will each partially mediate the effects of contrasts between the mixed and the concrete and the mixed and the control conditions on rumination as shown in figure 2.

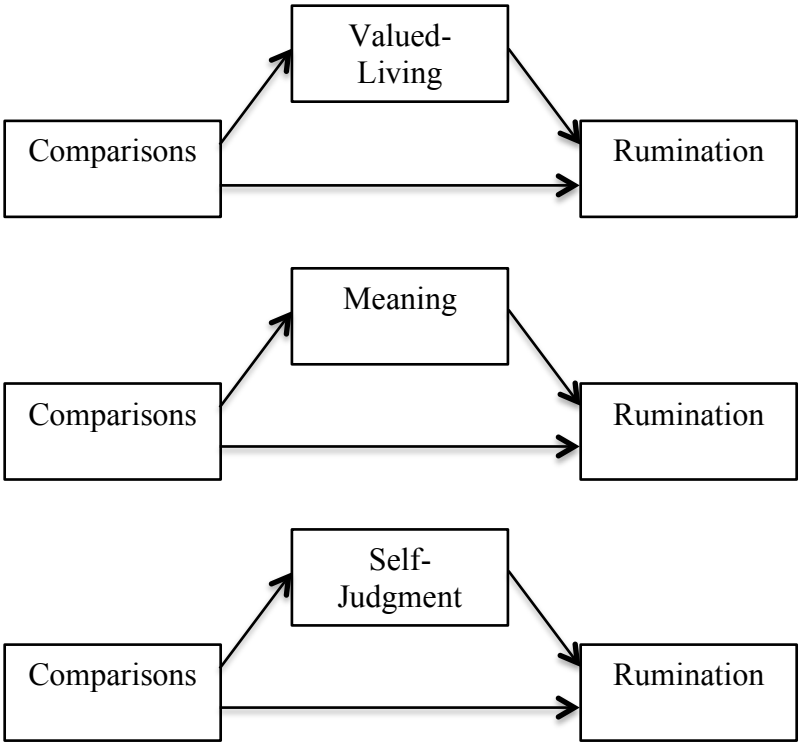

Figure 2. Mediation of the treatment differences on rumination. Two different comparisons were examined for each mediation model: The mixed condition vs. the concrete condition and the mixed condition vs. the control condition.

Study Aim 3

The third aim of the study was to explore whether a reduction in rumination by the treatments would account for a reduction in cognitive styles related to rumination. Rumination is thought to be one of the mechanisms that contributes to OGM, a cognitive style that serves as a marker for depression vulnerability (Williams et al., 2007). Therefore, this study examined if rumination explained (i.e., mediated) any effects of the treatments on OGM.

Hypothesis 3: Rumination Mediates the Effects of the Interventions on Overgeneral Autobiographical Memory

It is hypothesized that rumination will mediate the effects of the treatments on OGM assessed at post-intervention (Time 2) and at follow up (Time 3) as shown in Figure 3. Specifically, it is predicted that participants in the mixed and concrete treatment conditions will display a reduction in rumination, which in turn will be associated with a decrease in OGM.

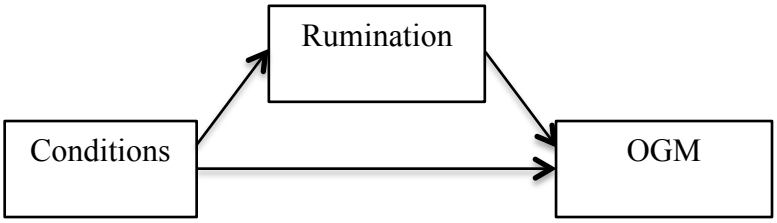

Figure 3. Mediation of the treatment difference on OGM by rumination.

Study Aim 4

The final aim of this study was to determine if a reduction in rumination caused by the treatment effects, partially explained any reduction in depressive symptoms. Empirical evidence demonstrates rumination is concurrently associated with depression, that rumination predicts the onset and severity of depression, and when experimentally induced, rumination exacerbates sad mood (e.g., Butler & Nolen-Hoeksema, 1994; Harrington & Blankenship, 2002; Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema & Morrow, 1993; Watkins & Teasdale, 2001). Therefore, this study examined if this intervention was useful in reducing depression through reductions in rumination. Consequently, participants completed a measure of depressive symptoms pre-treatment (Time 1), post-treatment (Time2), and at a three month follow-up (Time 3).

Hypothesis 4: Rumination Mediates the Effect of the Treatment on Depressive Symptoms

It is predicted that rumination will partially mediate the effects of the treatment on depressive symptoms at Time 2 and Time 3 as shown in Figure 4. Specifically, participants in the mixed and concrete conditions will be expected to display a decrease in rumination at Time 2 and Time 3 compared to the control condition, which in turn will be associated with a decrease in depressive symptoms at Time 2 and Time 3 respectively.

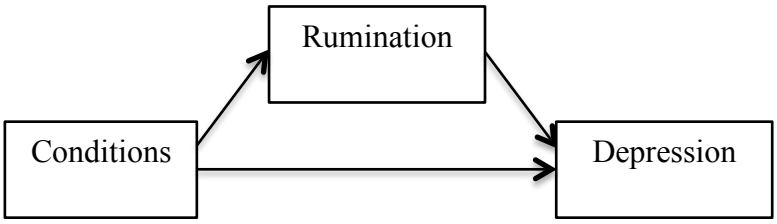

Figure 4. Mediation of the treatment differences for depression by rumination.

CHAPTER 3

Methodology

Participants

Study participants were college students enrolled in undergraduate educational psychology courses and were recruited through the University of Texas at Austin's Department of Educational Psychology subject pool in the fall of 2011. Participants were selected based on a minimum level of trait rumination. Two prescreening questions asked participants to endorse either "yes -- true of me" or "no – not true of me" to the following two statements: "I often think about recent situations wishing they could have gone better" and "I often analyze recent events to try to understand why I feel sad." Participants who responded, "yes -- true of me" to either of the questions were eligible for the study. Participants received course credit in return for study participation. A total of 300 students were assigned by the department.

Of the 300 students assigned to the study, 48 were not included in the final analysis. Nineteen students did not participate in the first session. Reasons given by participants for missing the first session included dropping the class and scheduling difficulties. An additional four participants were removed because they missed more than one intervention session. The decision to allow students to miss only one of the four sessions was a compromise designed to maintain the overall strength of the interventions while allowing participants some flexibility. The remaining 25 participants were removed due to inaccuracy in their responses. At the end of the study, participants were asked, "How honestly and accurately did you respond to the questions?" and "How careful and

thoughtful were you in completing the writings?" Twenty-one participants responded either "not at all thoughtful" or "not at all honest" and were removed from further analysis. Finally, three participants were not included due to problematic patterns of responding. For example, for all items in CES-D, they would respond "most or all of the time," including reverse coded items, indicating that they both "felt sad" and "felt happy" most or all of the time. After removing ineligible participants, the final number used in analysis was 252.

For this final sample of 252 participants, 71% were women and the mean age was 20.93 (*SD* = 2.90). The university classification of the sample was 8.7% freshmen, 14.3% sophomores, 29% juniors, 45.2% seniors, and 1.6% graduate students. Participants indicated that they belonged to the following ethnic/racial categories: 6.7% African-American/ Black, 22.6% Hispanic/Latino, .4% Native-American, 22.5% Asian, 41.4% Caucasian/European American, 1.2% Middle Eastern/Arab, 3.2% Multiracial, and 1.6% other.

This study was in compliance with the guidelines set forth by the Institutional Review Board for the Protection of Human Subjects at the University of Texas at Austin. The study received approval from the Institutional Review Board for the data collection beginning August 2011.

Measures

The Ruminative Response Scale (RRS; Hoeksema & Nolan, 1991) is one of the most frequently used instruments for measuring rumination and asks respondents to focus on the self (e.g., ‘‘think ‘Why am I the only person with these problems?’’’), symptoms

(e.g., “Think about your feelings of fatigue and achiness”), or consequences of the depressive mood (e.g., ‘‘think ‘I won’t be able to do my job/work because I feel so badly’”). The items are scored 1 (Never), 2 (Sometimes), 3 (Often), or 4 (Almost Always). The RRS was selected for the current study based on its wide use in experimental research. Nolen-Hoeksema and Morrow (1991) reported good internal consistency (α = .89) and predicative validity in terms of depression. Internal consistency in the current sample was high (Time 1 α =.93, Time 2 α =.94, and Time 3 α =.94).

The Centers for Epidemiological Studies- Depression scale (CES-D; Radloff, 1977) is a widely utilized instrument that consists of twenty items designed to measure depressive symptomatology in the general population. Respondents are asked to indicate the frequency of symptoms on a scale ranging from 0 (Rarely or none of the time) to 3 (Most of the time). Radloff used a threshold score of 16 for the indication of clinically significant depression. Internal consistency using coefficient alpha is estimated to be .85 for the community samples and .90 in clinical samples (Radloff, 1977). The CES-D demonstrated good internal consistency in the present sample (α =.89, α =.90, and α =.91).

Autobiographical Memory Task (AMT; Williams & Broadbent, 1986) is the most prominent procedure for measuring overgeneral autobiographical memory. The AMT procedure asks respondents to retrieve specific memories based on a presented cue word. A list of twelve cue words was presented in each of the three time periods. The lists contained six positive words (e.g., happy) and six negative words (e.g., failure) (Pollock & J. M. G. Williams, 2001; Watkins & Teasdale, 2001; Watkins, Teasdale, & R. M.

Williams, 2000). Three different lists of 12 words were used and counterbalanced in order for Time 1, Time 2, and Time 3. In a review of current autobiographical memory research, Williams (2007) found that there is not a significant correlation between outcome and the number of words. In addition, Williams found the AMT phenomenon seems to occur regardless of the particular cues. The current study uses a computerized version of the AMT (Rekart, Mineka, & Zinbarg, 2006). The procedure for the computerized version allows participants unlimited time to respond to cues. Some advantages of the computerized version are the standardization of the presentation of cues and greater participant privacy without an experimenter in the room. The instructions for the computerized version of the AMT were presented in a video and in text format with the following instructions (based on Rekart et al., 2006):

> This next section will ask you to remember specific events in your life. Twelve words will be displayed on the computer screen, one at a time. For each word displayed you will be asked to think of a specific personal memory that is associated with the word. The event could have happened recently (yesterday, last week) or a long time ago (when you were twelve). It might be a big event, or a trivial event. The important thing is that the memory be about a specific event. So, if the word "fun" were displayed on the computer screen, it would be correct to type "I celebrated my 21st birthday in Mexico." However, responding, "I always enjoy a good party" would not be okay, as it does not mention a specific event. Just one more thing, it is also important to try to recall a different memory or

event for each cue word or phrase. Please aim for a sentence or two for each word.

The memory you type should be a single event lasting no more than one day. For each word displayed try to come up with a memory within 60 seconds and then write it down in a sentence or two. There will be 12 words in total. It is key that you enter your responses to all twelve words in one sitting. Therefore, if you need a break, please take one before starting this next section.

Coding AMT Responses. Four research assistants, who were blind to condition, coded participants' responses as specific or nonspecific memories. Memories were coded as specific if the event lasted less than a day. For example, in response to the cue word "happy," a specific response would be "I was happy when I signed the paperwork for my first car." Non-specific memories were coded as a) a categorical memory (e.g., going to school every day when I was a child), b) an extended memory (e.g., "My vacation in Costa Rica."), c) a semantic association (e.g., "This makes me think of my best friend."), d) an omission (e.g., "I can't think of anything"), or e) a repeated memory. Raters were trained to code the AMT responses through coding of practice responses. Once high inter-rater agreement was achieved with sample responses, coders each coded 25% of the actual response from the study. In addition to the 25%, all coders coded that same subset (540 responses) to determine inter-rater reliability. Inter-rater reliability was good with kappa statistics ranging from .79 to.89 for each pair of coders.

Kentucky Inventory of Mindfulness Skills (KIMS) (Baer, Smith, & Allen, 2004) is a 39-item self-report measure that assesses four different factors of mindfulness: *Observe,*

Describe, Act with Awareness, Accept without Judgment. In the proposed study only the *Accept without Judgment* scale was used. This consists of 9-items on a 5-point Likert-style scale. Items were scored 1 (Never or very rarely true), 2 (Rarely true), 3 (Sometimes true), 4 (Often true), and 5 (Very often true or almost always true). Additionally, instructions from the original KIMS were altered to focus on thinking about negative events rather than a global assessment of self. The total for the Accept without Judgment subscale can be obtained by summing the scores for the items. Baer et al. (2004) found good internal consistency for the Accept without Judgment Scale with an alpha coefficient of .87. The KIMS demonstrated good internal consistency in the present sample (Time 2 α =.90 and Time 3 α =.90).

The Meaning-Making Scale (MMS; van den Heuvel, Demerouti, Schreurs, Bakker, & Schaufeli, 2009) is designed to measure the extent to which individuals find meaning in adverse events. The MMS consists of seven items that range from strongly agree (1) to strongly disagree (6). The MMS was selected over other scales that measure meaning of life (e.g., Steger, Frazier, Oishi, & Kaler, 2006) because the scale measures meaning drawn from negative events. Van den Heuvel et al. (2009) found Cronbach's alpha to be .78. The MMS demonstrated adequate internal consistency in the present sample (Time 2 α =.78 and Time 3 α =.77).

The Valued-Living Questionnaire (VLQ; Wilson, Sandoz, Kitchens, & Roberts, 2010) is an instrument designed to measure the extent that individuals' actions are consistent with what they value. It consists of 20-items divided into two 10-item sections. The first section asks respondents to rate the importance of ten different life domains

(e.g., family relationships, spirituality) on a 10-point Likert-style scale, ranging from 1 (not at all important) to 10 (extremely important). The second section asks respondents to rate how consistently they act in accordance with the same life domains on a 10-point scale, ranging from 1(not at all consistent) to 10 (extremely consistent). An *importance* score can be obtained by summing the scores from the first section. Similarly, a *consistency* score can be obtained by summing the items from the second section. This study used the composite score, which is obtained by taking the mean of the products of the score from the first and second sections on each of the ten domains. The VLQ composite demonstrated good internal consistency in the present sample (Time 2 α =.81 and Time 3 α =.85).

Procedure

Overview

The study utilized a repeated measures design with a single between subjects factor. The between factor was comprised of three conditions that asked participants to write from a particular perspective. The within factor contained three measurement times: Time 1 (pre-intervention), Time 2 (post-intervention), and Time 3 (a two week follow-up). All measures and writing sessions were administered via a web-based data collection tool at a location of the participant's choosing. Subjects were assigned to the study by the Department of Educational Psychology subject pool and were contacted by the principal investigator through email.

The initial email introduced the study and contained a link to the first session (Time 1). Figure 5 provides an overview of the session order. At Time 1, participants

provided informed consent and completed pre-intervention measures (RSS, CES-D, and AMT). Participants were then randomly assigned to one of the three conditions, and wrote about a bothersome experience they had been thinking about recently. Writing instructions encouraged a particular perspective based on condition assignment. Participants wrote from this same perspective in three additional sessions over the next two weeks. In the session (Time 2) that followed the writing interventions, participants again completed the same measures as at Time 1 (RRS, CES-D, and AMT) and additional measures (VLQ, MMS, and KIMS). Finally, to examine the stability of any treatment effects, a two-week follow-up (Time 3) was conducted. Time 3 contained the same measures as Time 2 and asked participants to provide demographic information.

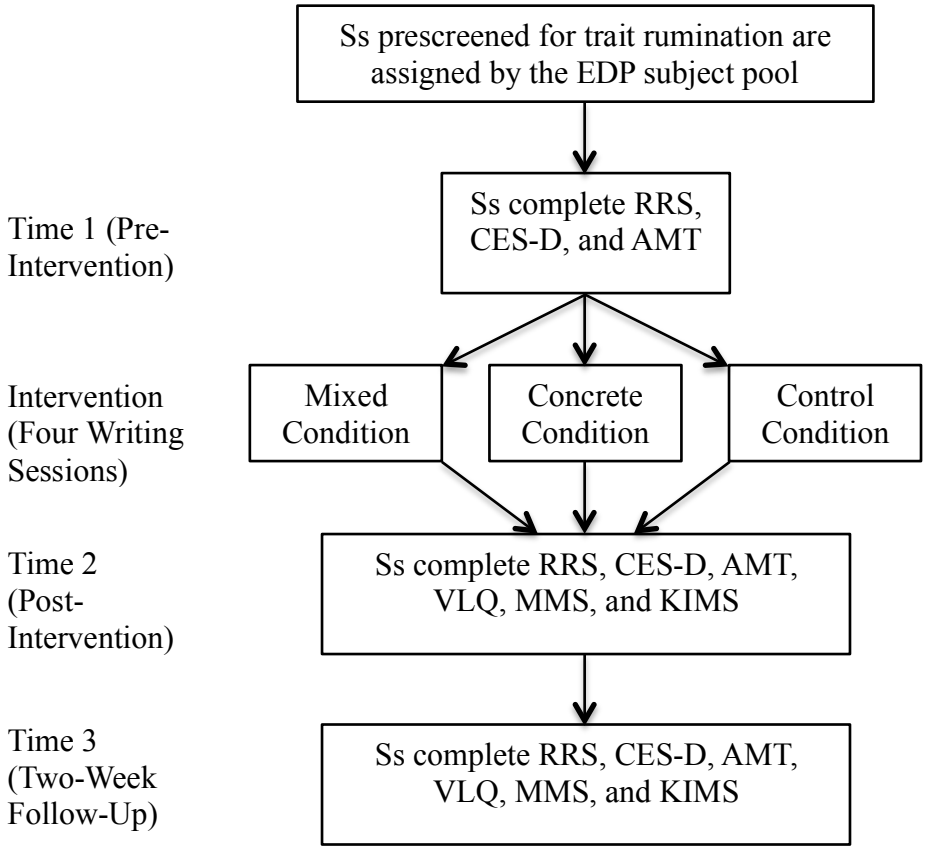

Figure 5. Study design and order of measures. MMS = Meaning Making Scale, RRS = Ruminative Response Scale, VLQ = Valued Living Questionnaire – Composite Score, KIMS = Kentucky Inventory of Mindfulness – Accept without Judgment Scale, CES-D= Center for Epidemiological Studies- Depression Scale, AMT = Autobiographical Memory Test - number of specific memories. The intervention phase involved writing about a bothersome event four times over a two-week period.

Intervention Conditions

The conditions attempted to elicit thinking about negative experiences at different levels of abstraction. The concrete conditions encouraged participants to focus their attention on relatively specific levels of thinking. The mixed condition combined both

abstract and concrete thinking and asked participants to relate abstract values to concrete details. In addition, a control condition was included that asked participants to think about a negative event but did not manipulate the level of abstraction.

The Concrete Condition. The concrete condition was based on a modified version of Watkins' concreteness training (Moberly & Watkins, 2006; Watkins, Baeyens, & Read, 2009). Similar to the Watkins, Baeyens, and Read (2009) study, there were three areas that the instructions addressed: (a) sensory details of the moment, (b) noticing the situation surrounding the event and the process of how events and behaviors unfold, and (c) finding alternative actions to address negative feelings. The actual computer prompts proceeded as follows:

- Negative experiences happen often and can take many forms. Examples of negative experiences can include romantic breakups, an argument with a friend, a bad grade on an important test, loss of a loved one, money concerns, a problem with family, or any other event that bothers you or keeps coming up in your thoughts. This next section will ask you to write about negative experiences in your life. Try to think about the most bothersome negative experience that has been on your mind recently. The experience could have happened at any time as long as you were thinking about it within the last week.
- Please write a brief phrase to describe the negative experience you are thinking about.
- When you think about this experience, how bothersome is it? (Ratings were on a 5 point Likert scale).

- Please rate how frequently you have been thinking about this event in the last week. (Ratings were on a 5 point Likert scale).
- Go back to the experience in your mind. Please describe your thinking and feelings as events unfolded as extensively as you can. Please write the equivalent of a medium to long paragraph (7-8 sentences/phrases).
- Go back to the experience and focus on the sensory details in the moment of the negative experience. For example, you might focus on what things felt like or the temperature in the room when you took certain actions. Other sensations might be what you could smell, see, or hear. Write about some of the sensations you remember moment to moment during the experience. Please try to think back and write as extensively as you can. Please write the equivalent of a medium to long paragraph (7-8 sentences/phrases).
- What are some specific alternative actions you could take to change how you feel about this event? Please spend the next few minutes discussing alternatives and providing specific details as extensively as you can. Please write the equivalent of a medium to long paragraph (7-8 sentences/phrases).

The Mixed Condition. The mixed condition initially asked participants to rate how important different values were to them. The computer displayed a list of values and examples of how one might interpret a particular value. For instance, the value of *security* lists a possible interpretation as: *It is important to you to live in secure surroundings; to have a secure income and know how your needs will be met* (See Appendix A.7 for a full list). Values were based on the integration of several different theories and worksheets

(Davidov, Schmidt, & Schwartz, 2008; Hayes, Strosahl, & Wilson, 1999; Linehan, 2010). The names of values differed from those outlined in the Valued-Living Questionnaire to reduce differential group exposure. Participants placed a check mark next to any value that they deemed important. After selecting from the list of values, participants were asked to choose the four or five most important to them and drag them to a separate box. After participants completed this task, the computer displayed screens with the following prompts:

- Negative experiences happen often and can take many forms. Examples of negative experiences can include romantic breakups, an argument with a friend, a bad grade on an important test, loss of a loved one, money concerns, a problem with family, or any other event that bothers you or keeps coming up in your thoughts. This next section will ask you to write about negative experiences in your life. Try to think about the most bothersome negative experience that has been on your mind recently. The experience could have happened at any time as long as you were thinking about it within the last week.
- Please write a brief phrase to describe the negative experience you are thinking about.
- When you think about this experience, how bothersome is it? (Ratings were on a 5 point Likert scale).
- Please rate how frequently you have been thinking about this event in the last week. (Ratings were on a 5 point Likert scale).

- Think about the specific event. How does this negative event relate to the values that you listed as important to you? Please focus your attention on how the experience makes you feel more distant from certain important values. For example, if your negative experience was poor test performance, you might focus on how this may have been an obstacle to your important value of achievement. In addition, if there were some ways in which the negative experience was consistent with certain values, you could add that too.

  As a reminder, some values that you listed as important were: (the screen displayed values that the participant had earlier endorsed).

  Please write the equivalent of a medium to long paragraph (7-8 sentences/phrases) in the box below.

- For the values you just discussed in connection with the experience, what are some specific alternative ways that you could act in line with those values? What alternative actions could you take to make progress toward these values? Please discuss actions you could take and provide specific details.

  As a reminder, some values that you listed as important were: (the screen displayed values that the participant had earlier endorsed).

  Please write the equivalent of a medium to long paragraph (7-8 sentences/phrases) in the box below.

The Control Condition. Participants in the control condition were asked to think about a negative experience and write about it briefly. Participants then wrote about what

their typical Monday was like (the day varied from session to session). The actual computer prompts proceeded as follows:

- Negative experiences happen often and can take many forms. Examples of negative experiences can include romantic breakups, an argument with a friend, a bad grade on an important test, loss of a loved one, money concerns, a problem with family, or any other event that bothers you or keeps coming up in your thoughts. This next section will ask you to write about negative experiences in your life. Try to think about the most bothersome negative experience that has been on your mind recently. The experience could have happened at any time as long as you were thinking about it within the last week.
- Please briefly describe the negative experience in a sentence or two.
- When you think about this experience, how bothersome is it? (Ratings were on a 5 point Likert scale).
- Please rate how frequently you have been thinking about this event in the last week. (Ratings were on a 5 point Likert scale).
- We are also interested in the types of activities students engage in. Please write a paragraph describing your activities and schedule on a typical Monday. Include possible activities that you might do both during the day and in the evening. Please write the equivalent of a medium to long paragraph (7-8 sentences/phrases).

Study Duration

In total, data collection lasted approximately one month and contained six different sessions (see Table 1). For each session, participants received an email with a link to study materials. Participants had a three day window in which to complete each session. Once the deadline for a session was reached, links to study material were no longer active. Twenty-four hours after a window closed, an email with a link to the next writing session was sent out (with the exception of the 2-week follow-up).

Table 1

Study Session Dates and Activities

Session	Date of Email Sent to Participants	Deadline for Completion	Activities
Session 1 (Time 1)	Oct. 3, 2011	Oct. 6, 2011	Pre-measures and writing
Session 2	Oct. 7, 2011	Oct. 10, 2011	Writing
Session 3	Oct. 11, 2011	Oct. 14, 2011	Writing
Session 4	Oct. 15, 2011	Oct. 18, 2011	Writing
Session 5 (Time 2)	Oct. 19, 2011	Oct. 22, 2011	Post-measures
Session 6 (Time 3)	Nov. 5, 2011	Nov. 8, 2011	Follow-up measures

CHAPTER 4

Results

The aim of this study was to examine whether focusing on negative events from a mixed concrete and abstract perspective would be beneficial in reducing rumination. Participants were randomly assigned to write about a negative experience from one of three perspectives: mixed, concrete, or control. The specific hypotheses predicted that participants in the mixed condition would show a greater reduction in rumination, OGM, and depression than participants in the traditional concrete condition or the control condition. Additionally, hypotheses predicted that any reduction in rumination might be mediated by valued living, meaning making, and self-judgment. Finally, rumination was predicated to mediate any treatment differences in OGM or depression.

Descriptive Statistics

The means, standard deviations, and intercorrelations of the main study variables are presented in Table 2. All 252 eligible participants completed Time 1 measures. Not every participant completed both Time 2 and Time 3. Participants' data were included in the subsequent analysis so long as said participants completed at least one of the post-intervention sessions. This resulted in an *n* of 241 at Time 2, and an *n* of 250 participants at Time 3. The analyses for Time 2 and Time 3 outcomes were conducted separately in this study. An alpha value of .05 was used to determine significance for all statistical tests.

Table 2

Means, Standard Deviations, and Intercorrelations of Study Variables

Study Variables	1	2	3	4	5	6	7	8	9
1. RRS Time 1	1	.76**	-.01	.75**	.55**	-.07	.68**	.54**	.01
2. CES-D Time 1		1	-.05	.68**	.71**	-.13*	.66**	.64**	.02
3. AMT Time 1			1	-.04	-.08	.48**	-.04	-.05	.47**
4. RRS Time 2				1	.78**	-.04	.80**	.69**	.02
5. CES-D Time 2					1	-.08	.67**	.76**	.06
6. AMT Time 2						1	-.05	-.07	.58**
7. RRS Time 3							1	.82**	-.04
8. CES-D Time 3								1	-.03
9. AMT Time 3									1
n	252	252	251	241	241	241	248	248	247
M	45.04	18.61	7.95	43.42	17.61	7.71	41.66	17.05	7.67
SD	11.46	9.93	3.01	12.26	10.08	3.22	12.04	10.30	3.07

Note. CES-D= Center for Epidemiological Studies- Depression Scale, AMT = Autobiographical Memory Test - Number of Specific Memories, RRS = Ruminative Response Scale. **. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).

Sample Characteristics

Analysis of Removed Cases

Of the 281 participants who were originally assigned to the study and completed Time 1, 252 were included in the final analysis. As detailed in the methods section, 29 participants did not meet the inclusion criteria based on either the number of writing sessions completed or the accuracy of their responses. Of the four participants who failed

to complete the minimum number of writing sessions, three were removed from the mixed condition and one was removed from the control condition. An examination of the initial scores did not reveal any extreme characteristics for these participants. For the 25 participants who were removed for providing inaccurate data (see the methods section for criteria), eight were removed from the control condition, seven were removed from the experiential condition, and eleven were removed from the mixed condition. To evaluate possible differences in those who were removed from the study for inaccuracy and those included in the analysis, separate ANOVA and chi-squared analyses were conducted on demographic variables and baseline measures. There were no significant differences based on Sex (χ^2 (1, N = 274) = 0.03, p = .98), age (p = .45), or class (χ^2 (4, N = 271) = 1.02, p = .90). Examination of baseline measures also revealed no significant differences in initial rumination level (F(1, 272) = 1.48, p = .23) or depression (F(1, 272) = .04, p = .85) between those removed and those retained in the analysis. Of note, some removed participants could not be included in some of these analyses because their baseline measure of rumination and depression were inaccurate, or they missed the last session, which contained the demographic questions.

A check was also conducted for participants who were retained in the analysis but missed Time 2. These eleven participants were compared to participants who completed Time 2 on baseline measures. ANOVAs revealed no differences in initial levels of rumination (F(1, 250) = .72, p = .40), depression (F(1, 250) = .71, p = .40), and OGM (F(1, 249) = 1.42, p = .24).

Tests of Initial Group Differences

Although participants were randomly assigned to the control condition (n = 90), the concrete condition (n = 88), and the mixed condition (n = 74), chi-square analyses and one-way ANOVAs were conducted to check for possible differences on demographic variables and baseline measures. There were no significant differences in demographic characteristics among the three conditions as shown in Table 3. Of note, the chi-squared test requires a cell count of 5 to be appropriate. Therefore, the chi-squared test comparing the race by condition comprises only racial categories with the minimum requirement in the analysis (i.e., Asian, White, and Hispanic). As displayed in Table 4, there were also no significant differences between the conditions on baseline measures of rumination, depression, and autobiographical memories (all p values > .17).

Table 3

Demographic and Baseline Characteristics by Intervention Group

		Intervention Group					
Characteristic		Total	Control	Concrete	Mixed	p^a	
n		250	91	86	73		
Age *M* (*SD*), years		20.93 (2.88)	21.07 (3.87)	21.14 (2.54)	20.51 (1.57)	.33	
Women (%)		71.00	77.8	67	67.6	.21	
Race						.20	
Black		17	8	9	0		
Hispanic		56	15	16	25		
Native-American		1	1	0	0		

Asian		57		16		17		24	
White		103		43		34		26	
Middle Eastern		3		1		1		1	
Multi-Racial		8		3		5		0	
Other		4		0		3		1	
Classification									.18
Freshman		22		9		7		6	
Sophomore		36		9		10		17	
Junior		73		33		23		17	
Senior		114		35		47		32	
Graduate		4		2		1		1	

Note. [a] *p* is for intervention group comparisons with one-way ANOVAs or chi-square tests

Table 4

Baseline for Continuous Variables by Intervention Group

		Intervention Group					
Measure		Total *M* (*SD*)		Control *M* (*SD*)		Concrete *M* (*SD*)		Mixed *M* (*SD*)	p^a
CES-D		18.61 (9.92)		17.98 (9.14)		18.53 (10.81)		19.47 (9.82)	.63
AMT		9.94 (3.01)		8.39 (2.79)		7.55 (3.20)		7.87 (3.01)	.17
RRS		45.03 (11.46)		44.46 (11.46)		44.85 (11.83)		45.95 (11.08)	.69

Note. CES-D= Center for Epidemiological Studies- Depression Scale, AMT = Autobiographical Memory Test - number of specific memories, RRS = Ruminative Response Scale.
[a] *p* is for intervention group comparisons with one-way ANOVAs.

Examination of the Writing Component

Responses to the writing prompts were examined to provide greater understanding of the types of negative experiences about which participants wrote. Recall that each participant completed four writing sessions over the course of two weeks. The participant could choose to write about the same bothersome experience in each session or a different experience. In response to the prompt "When you think about this experience, how bothersome is it?", participants gave a mean rating of 3.70 on a 5 point Likert scale, indicating that the average rating fell between "somewhat" and "very." On average, participants gave a rating of 3.40 on a 5 point Likert scale as to how frequently they thought about the experience. This score fell between "somewhat" and "quite a lot." The type of negative experience that the participants wrote about varied greatly. To provide a general sense of the types of experiences participants wrote about, I coded each description into one of eleven categories. Table 5 displays the number of participants who wrote about a particular category and examples of actual writing samples. Participants also varied in the number of different negative experiences that they wrote about: 39.7% of the sample wrote about the same experience in all four sessions, 27.8% wrote about two different experiences, 18.7% wrote about three different experiences, and 11.5% wrote about a different negative experience in every session. The mean length in number of characters for the control condition (M = 1094.08) was significantly less than the concrete condition (M= 3421.59), $t(172) = 120.16$, $p < .001$, and the mixed condition (M = 3455.76), $t(158) = 128.08$, $p < .001$. The concrete and the mixed conditions did not significantly differ in length ($p = .21$).

Table 5

Writing Sample Categories and Examples

Category for Negative Experience	Number of Experiences	Percentage	Examples
Roommate disagreements	36	3.6%	"My roommate is moving out of my apartment currently and I'm not entirely sure why."
Significant other/dating concern	274	27.4%	"My boyfriend of 2 years broke up with me last week. Next week is supposed to be our 3 year anniversary."
Interactions with friends/peers	97	9.7%	"I didn't get into a fraternity."
Academic	221	22.1%	"I failed two of my CS courses last semester."
Death or illness of loved one	61	6.1%	"My cousin died recently, 6 days after my birthday and his death is really taking a toll on me. I have yet to find peace and I doubt I ever will."
Money related	35	3.5%	"Went to Dallas for OU weekend and wasted money and time."
Family related	98	9.8%	"I found out my dad cheated on my mom."
Work related	25	2.5%	"My boss (and very good friend) was fired at work this week, and I became afraid for my own job security."
Trauma experience	10	1.0%	"My purse was stolen."
Legal/car	33	3.3%	"I received a DWI and spent 12 hours in

accident			jail."
Other	85	8.5%	"I didn't understand my purpose in life."
Total	975		

Note. Participants may have written about the same experience in multiple sessions. Percentages reflect the total experiences, not the total unique experiences.

AMT Preliminary Analyses

Consistent with recent literature, the total number of specific memories generated on the AMT was used to measure overgeneral autobiographical memory in the current study (Williams et al., 2007). Recall that participants completed three different AMT word lists (Appendix A.8). To check the equality of the word lists, a one-way between groups ANOVA was conducted with word list as the independent factor and AMT specificity scores at Time 1 as the dependent variable. The difference between the mean Time 1 AMT scores across lists A ($M = 7.85$), B ($M = 8.12$), and C ($M = 7.95$) was not significant ($p > .05$), suggesting that the word lists can be considered equivalent. In addition, recall that within each condition, word lists were presented in counterbalanced order across Time 1, Time 2, and Time 3. The order was randomly assigned across groups. A chi-square test found that the order assigned did not differ by condition (χ^2 (1, $N = 252$) = 2.49, $p = .65$). A repeated measures ANOVA was conducted with time as a within factor and order as a between factor for AMT scores at Time 1, Time 2 and Time 3. The interaction between Time and Order was not significant ($p > .05$), indicating that the order did not affect changes in AMT scores over time.

Examination of Hypotheses

Hypothesis 1a: Effects of the Intervention on Rumination, OGM, and Depression

It was hypothesized that participants in the mixed condition would display decreased rumination, OGM, and depression at approximately one day post-intervention (Time 2) and at the two-week follow-up (Time 3) compared to participants in the concrete and control conditions.

Hypothesis 1b: Effects of the Intervention on Rumination, OGM, and Depression

It was hypothesized that participants in the concrete condition would display decreased rumination, OGM, and depression post-intervention (Time 2) and at follow up (Time 3) compared to participants in the control conditions.

Results for Hypothesis 1.

Preliminary Analysis of Rumination, Depression, and OGM

Prior to investigating outcomes a case analysis was conducted. An examination of *z* scores was conducted to check for univariate outliers for any of the variables (the criteria for an outlier was an absolute value greater than 3). Any value over three was examined to determine accuracy of response. Two cases had *z* scores over 3 on the Time 1 RRS (highest 3.13). An examination of the responses for these participants revealed the data to be valid. Scatterplots were examined for influential bivariate outliers for the whole sample and by groups. No bivariate outliers were found for the CES-D and RRS. The AMT had several outliers in comparisons of both Time 1 by Time 2 and Time 1 by Time 3. However, a sensitivity analysis showed no change in significance based on whether these cases were excluded. Of note, AMT score was not significantly related to

rumination or depression in this sample (see Table 2). An exploration of histograms was conducted for each dependent variable alone and for each dependent variable by group. All histograms appeared normal. All absolute values of skew were less than .4 and kurtosis less than 1.0.

Analytic Strategy

To assess treatment differences between conditions at Time 2 and Time 3, a separate analysis was conducted for each dependent variable. The initial analytic strategy utilized ANCOVAs to control for Time 1 score and obtain adjusted means for each dependent variable at Time 2 and Time 3. The adjusted means were used to test the planned comparisons outlined in the hypothesis. This strategy was employed for rumination and OGM. However, for the depression outcome, an interaction was found between initial CES-D score and condition. As such, a regression analysis was conducted to decompose this interaction for both Time 2 and Time 3 outcomes. The following sections outline the analysis for each dependent variable in turn. Means and standard deviations for each dependent variable by conditions are presented in Table 6.

Table 6

Means and Standard Deviations of Outcome Measures by Intervention Group at Times 1, 2, and 3

Intervention Group										
	Control				Concrete				Mixed	
	n	*M*	*SD*		*n*	*M*	*SD*		*n*	*M*	*SD*
RRS										
Time 1	90	44.47	11.46		88	44.85	11.83		74	45.96	11.08
Time 2	86	43.97	13.82		82	42.99	11.77		73	43.26	10.90
Time 3	87	42.15	12.94		88	41.81	12.19		73	40.90	10.80
CES-D										
Time 1	90	17.98	9.14		88	18.53	10.81		74	19.47	9.82
Time 2	86	16.52	11.05		82	18.09	10.20		73	18.34	8.67
Time 3	87	16.49	10.91		88	17.99	10.72		73	16.59	9.02
AMT										
Time 1	89	8.39	2.79		88	7.56	3.20		74	7.88	3.02
Time 2	86	8.34	2.54		82	7.41	3.47		73	7.32	3.57
Time 3	86	7.67	3.00		88	7.49	3.08		73	7.89	3.16

Note. CES-D= Center for Epidemiological Studies- Depression Scale, AMT = Autobiographical Memory Test - number of specific memories, RRS = Ruminative Response Scale.

Depression

An aim of the study was to determine if the mixed condition led to a significantly greater decrease in depression than the other two conditions and if the concrete condition led to a greater decrease than the control. To examine if there were treatment differences at Time 2 and Time 3, ANCOVA was originally considered as a statistical method to control for Time 1 CES-D. However, as discussed below, while testing the assumptions of an ANCOVA, a significant interaction was found between Time 1 CES-D score and condition. This indicates that the treatment differences depended on the initial level of depression. Thus, multiple regression was used to understand the nature of the interaction.

Testing the Assumptions of ANCOVA and the Discovery of an Interaction. The assumptions of ANCOVA were examined for CES-D at Time 2 and Time 3. Independence, normality, linearity between the covariate and the dependent variable, and homogeneity of variance were all tenable. The procedure outlined by Stevens (2009, p. 306) was used to test the assumption of homogeneity of the regression slopes, in which an interaction term between the covariate and treatment variable is included in the model. For CES-D at Time 2, a significant interaction was found between CES-D score at Time 1 and condition ($F(2, 235) = 6.16$, $p < .01$). Similarly, for the CES-D at Time 3 ANCOVA, an interaction was found between CES-D score at Time 1 and condition ($F(2, 242) = 3.78$, $p < .05$). Based on these findings, the assumption of the homogeneity of the regression slopes was violated, and thus, ANCOVA was not an appropriate statistical test for measuring differences in CES-D at Time 2 and Time 3. More importantly, this means

that the treatment effects worked differently depending on the initial level of depression. Figure 6 and Figure 7 demonstrate the interaction.

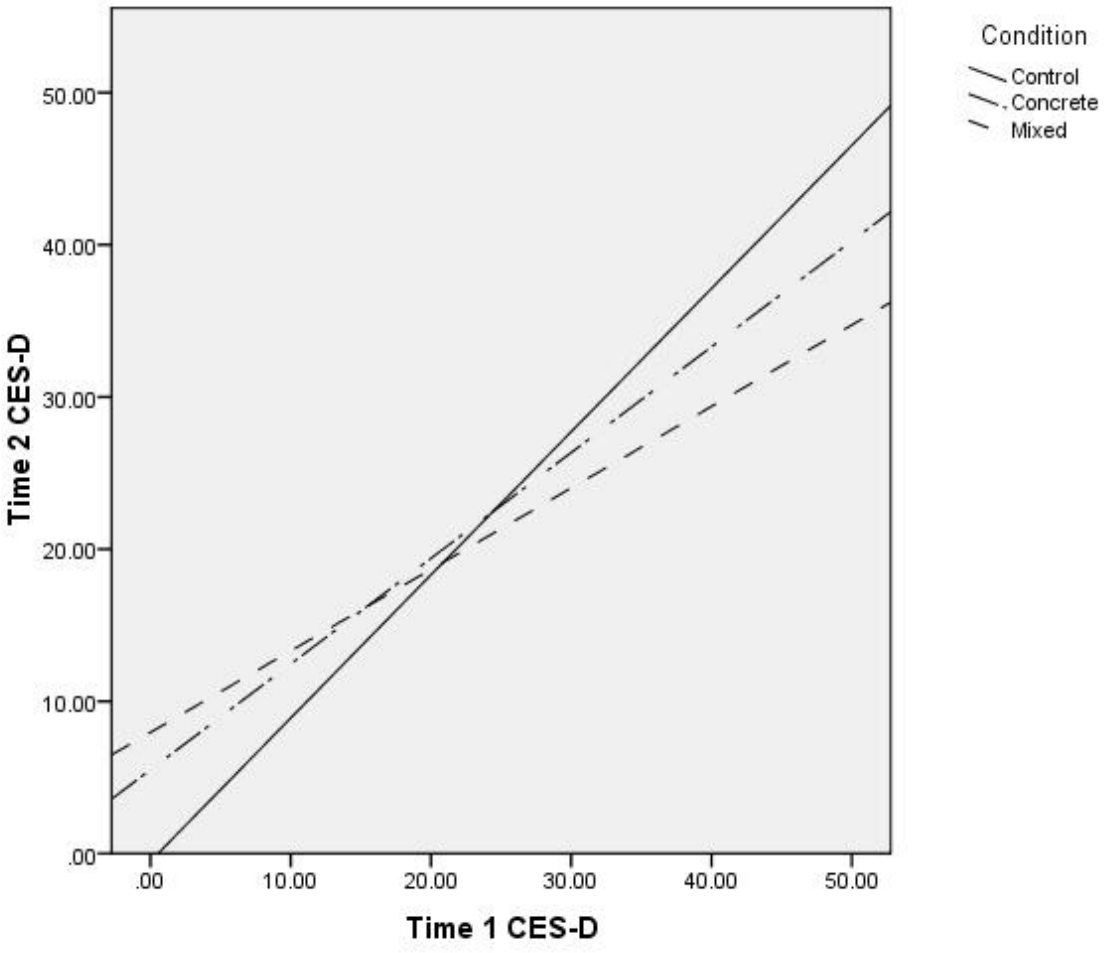

Figure 6. Time 1 CES-D score by Time 2 CES-D score by condition. This figure shows fit lines by group for Time 1 CES-D score versus Time 2 CES-D score. CES-D= Center for Epidemiological Studies- Depression Scale

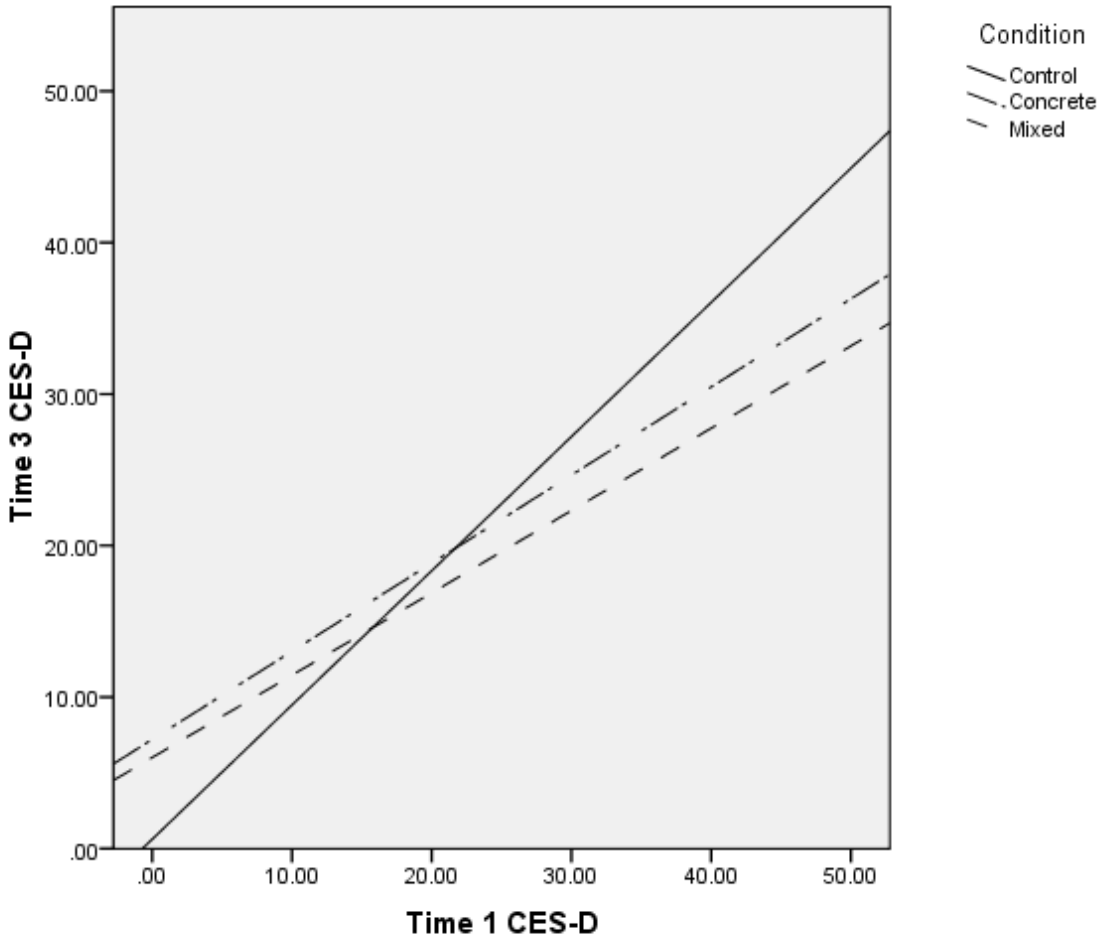

Figure 7. Time 1 CES-D score by Time 3 CES-D score by condition. This figure shows fit lines by group for Time 1 CES-D score versus Time 3 CES-D score. CES-D= Center for Epidemiological Studies- Depression Scale

Analytic Strategy for Decomposing the Interactions. The interactions between initial CES-D score and condition for depression outcomes were decomposed using multiple regression analysis. In testing interactions with a continuous predictor, a commonly used procedure is to include the cross products of the predictor and moderator variables in a multiple regression analysis. To accomplish this, CES-D score at Time 1 was first centered by subtracting its mean score to reduce multicollinearity. Condition

was then coded into two dummy variables, with the first dummy variable coded 1 for the concrete condition and the second dummy variable coded 1 for the mixed condition. Both dummy variables were multiplied by the centered CES-D score to create two interaction terms. In a first step in a sequential regression, the relevant outcome (Time 2 or Time 3 CES-D score) was regressed on Time 1 CES-D score, dummy variable 1, and dummy variable 2. In the second step, the interaction terms were entered into the regression. The dummy variables were then recoded and a separate regression was run to check for interactions with the mixed-concrete contrast. Significant interactions were subjected to further analysis to find regions of significance. For each analysis the assumptions of multiple regression were reassessed.

In order to understand where the specific contrasts differed in terms of initial CES-D score, Johnson-Neyman Confidence Bands were calculated to find regions of significance. Another option would have been to decompose the interaction by picking a point based on theory, such as high or low depression. A disadvantage of the pick a point approach is that the selection of the point can be arbitrary. For example, in the case of CES-D, research has not established a definitive cut point for the presence of depression. In contrast, the Johnson-Neyman technique (Johnson & Fay, 1950; Johnson & Neyman, 1936) allows the estimation of specific regions of a moderator (e.g., Time 1 CES-D) where the effects of the predictor (e.g., Mixed-Control Contrast) are significant on the outcome (e.g., Time 2 CES-D). Based on this advantage, the Johnson-Neyman technique was selected as a way to understand the interactions. To conduct the actual analysis, the procedures outlined by Hayes and Matthes (2009) were followed and Hayes' SPSS

Process syntax macro was utilized to calculate moderator values for significant regions (Hayes, 2012). A macro is an addition to SPSS written in syntax that defines a series of commands or calculations. Hayes (2012) includes documentation specifying the equations used in the macro. In cases where a region of significance was found, a range of effect sizes were calculated using Cohen's *d* statistic. The square root of the mean square error for a one-way ANOVA with condition as an independent factor and the relevant depression score (Time 2 or Time 3) as a dependent factor provided the denominator for the calculations. The numerators were the lowest and highest effects in a significant region.

Depression at Time 2. In the first step in a sequential regression, Time 2 CES-D score was regressed on Time 1 CES-D score, the concrete-control contrast (dummy variable 1), and mixed-control contrast (dummy variable 2). In the second step, the interaction terms were entered into the regression. The overall regression was significant (adjusted $R^2 = .52$, $F(5, 235) = 53.06$, $p < .001$) and the inclusion of the interaction terms led to a significant change in R^2 ($\Delta R^2 = .03$, $F(2, 235) = 6.16$, $p < .01$). Table 7 shows the results of the second step in the analysis and indicates that both the interactions were significant. This finding suggests that, depending on participants' initial levels of depression, the mixed condition and concrete condition each had treatment effects on Time 2 CES-D compared to the control condition. The dummy variables were then recoded to test for an interaction between the initial CES-D score and the mixed-concrete contrast. The interaction term between initial CES-D score and the mixed-concrete

contrast was not significant ($p > .15$). In addition, the mixed-concrete contrast by itself was also not a significant predictor of Time 2 CES-D score ($p > .56$).

Table 7

Regression Coefficients for the Prediction of Post Intervention (Time 2) CES-D Scores

	B	Std. Error	Beta	*t*	Sig.
(Constant)	17.00	0.75		22.55	< .001
CES-D (Time 1)	0.94	0.08	0.92	11.52	< .001
Concrete-Control (dummy 1)	1.43	1.08	0.07	1.33	.19
Mixed-Control (dummy 2)	0.92	1.11	0.04	0.83	.41
CES-D x Concrete-Control	-0.25	0.11	-0.15	-2.23	.03
CES-D x Mixed-Control	-0.41	0.12	-0.22	-3.47	< .001

Note. CES-D = Center for Epidemiological Studies- Depression Scale, concrete-control (dummy 1) = the dummy coding for the contrast between the concrete and control conditions, mixed-control (dummy 2) = the dummy coding for the contrast between the mixed and control conditions.

Depression at Time 2: Examination of the Mixed-Control by CES-D Interaction. Using the Process SPSS macro, Time 2 CES-D score was regressed on the mixed-control contrast, Time 1 CES-D score, and the interaction term. The overall regression was significant ($R^2 = .54$, $F(3, 155) = 60.72$, $p < .001$), and the inclusion of the interaction term led to a significant change in R^2 ($\Delta R^2 = .04$ ($F(1, 155) = 12.45$, $p < .001$). This indicates that the interaction between initial CES-D score and the mixed-control contrast accounted for 4% of the variance in Time 2 CES-D score.

The Johnson-Neyman technique found two moderator values defining significance regions: 15.18 and 28.52. Appendix B.1 displays conditional effects for specific values of Time 1 CES-D. For participants with Time 1 CES-D scores below 15.18 (44.4% of the total sample), the mixed condition had higher levels of depressive symptoms than the control group. The effect size for the conditional effects in this

significance region ranged from .23 to .76, which indicated that, depending on Time 1 CES-D score, the unexpected adverse treatment effects of the mixed-control contrast ranged from small to large. For participants with Time 1 CES-D scores above 28.52 (18.3% of the total sample), the mixed condition had significantly lower Time 2 CES-D scores than the control condition. Cohen's *d* ranged from .35 to 1.08, which indicates small to large treatment effects.

Depression at Time 2: Examination of the Concrete-Control by Initial CES-D Interaction. Using the Process SPSS syntax macro, Time 2 CES-D score was regressed on the concrete-control contrast, Time 1 CES-D, and the interaction term. The overall regression was significant (R^2 = .57, $F(3, 164)$= 73.75 , p <.001), and the inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.01 ($F(1, 164)$= 4.94, p < .05). This indicates that the interaction between initial CES-D score and the concrete-control contrast accounted for 1% of the variance in Time 2 CES-D score.

The Johnson-Neyman technique found one moderator value defining a significance region: 15.44. For participants with Time 1 CES-D scores below 15.44 (44.4% of the total sample), the concrete condition had higher levels of depressive symptoms than the control group as measured by Time 2 CES-D. Cohen's *d* ranged from .22 to .58, which indicates small to medium effects. For participants with Time 1 CES-D scores above 15.44, the contrast was not significant.

Depression at Time 3. As with Time 2, the interaction between initial CES-D score and condition was explored for Time 3 CES-D score using multiple regression. As a first step in a sequential regression, Time 3 CES-D score was regressed on Time 1

CES-D score, the concrete-control contrast (dummy variable 1), and the mixed-control contrast (dummy variable 2). In the second step, the interaction terms were entered into the regression. The overall regression was significant (adjusted R^2 = .42, $F(5, 242)$= 37.14, p <.001), and the inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.02, ($F(2, 242)$= 4.34, p <.05). Table 8 shows the results of the second step in the analysis and indicates that both interactions tested were significant. The dummy variables were recoded, and the interaction for the contrast between the mixed and concrete conditions was tested. The interaction for the concrete-mixed contrast and initial CES-D score was not significant (p = .75). The contrast between the mixed and concrete condition alone also did not significantly predict Time 3 CES-D score (p = .11).

Table 8

Regression Coefficients for the Prediction of 2-week Follow-Up (Time 3) CES-D Scores

	B	Std. Error	Beta	*t*	Sig.
(Constant)	17.11	0.84		20.33	< .001
CES-D (Time 1)	0.89	0.09	0.86	9.68	< .001
Concrete-Control (dummy 1)	0.93	1.19	0.04	0.78	.44
Mixed-Control (dummy 2)	-0.98	1.25	-0.04	-0.79	.43
CES-D x Concrete- Control	-0.30	0.12	-0.19	-2.53	.01
CES-D x Mixed-Control	-0.34	0.13	-0.18	-2.62	.01

Note. CES-D = Center for Epidemiological Studies- Depression Scale, concrete-control (dummy 1) = the dummy coding for the contrast between the concrete and control conditions, mixed-control (dummy 2) = the dummy coding for the contrast between the mixed and control conditions.

Depression at Time 3: Examination of the Mixed-Control by CES-D Interaction.

The Johnson-Neyman technique was used to determine where treatment differences existed for the mixed-control contrast on Time 3 CES-D. Using the Process SPSS macro, Time 3 CES-D score was regressed on the mixed-control contrast, Time 1 CES-D score,

and the interaction term. The overall regression was significant (R^2 = .49, F(3, 156)= 49.01 , p <.001), and the inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.03, F(1, 156)= 7.93, p < .01). This indicates that the interaction between initial CES-D Score and the mixed-control contrast accounted for 3% of the variance in Time 3 CES-D score.

The Johnson-Neyman technique found two moderator values defining regions of significance: 2.63 and 23.11. For participants with Time 1 CES-D scores above 23.11 (28% of the total sample), the mixed condition had significantly lower Time 3 CES-D scores than the control condition. The effect sizes for the mixed-control contrast on Time 3 CES-D for this region of significance ranged from small to large (Cohen's d = .24 to Cohen's d = 1.07). For participants with Time 1 CES-D scores below 2.63 (0.8% of the total sample), the mixed condition had significantly higher Time 3 CES-D scores than the control condition. However, only two participants in the sample fell within this range, which makes the findings for this region uncertain. The control condition and the mixed condition did not significantly differ in depressive symptoms from Time 3 for participants with Time 1 CES-D scores between 2.63 and 23.11.

Depression at Time 3: Examination of the Concrete-Control by CES-D Interaction. The significant interaction for the concrete-control contrast and initial CES-D score was also examined. Time 3 CES-D score was regressed on the concrete-control contrast, Time 1 CES-D, and the interaction term using the Process SPSS macro. The overall regression was significant (R^2 = .46, F(3, 170)= 47.87 , p <.001), and the inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.02 (F(1, 170)=

6.09, $p = .02$). This indicates that the interaction between initial CES-D score and the concrete-control contrast accounted for 2% of the variance in Time 3 CES-D score.

The Johnson-Neyman analysis returned two moderator values defining significance regions: 12.59 and 43.06. For participants with Time 1 CES-D scores below 12.59 (33.3% of the total sample), the concrete condition had higher Time 2 CES-D scores than the control group. For this region of significance the effect sizes ranged from .27 to .61, which indicates small to medium effects. For participants with Time 1 CES-D scores above 43.06 (1.6% of the total sample), the concrete condition had significantly lower Time 3 CES-D scores than the control group. Because only 5 participants in the whole sample had scores above 43.06, the findings for this region are uncertain. Cohen's *d* for this region ranged from .63 to .75, which indicates medium to large effect sizes. For participants with Time 1 CES-D scores between 12.59 and 43.06, the concrete-control contrast did not have a significant effect on Time 3 CES-D score.

Moderator Values Compared with Commonly Used Cut points. Various cut points have been used to indicate depression, which range from 12 to 27. (Klinkman, Coyne, Gallo, & Schwenk, 1997; Lewinsohn, Seeley, Roberts, & Allen, 1997; Myers & Weissman, 1980; Radloff, 1977; Zich, Attkisson, & Greenfield, 1990). A recent study compared various cut points on the CES-D with DSM-IV criteria for depression in college populations. This study used the receiver operating characteristics (ROC) statistical procedure to determine the accuracy of the cut points in making a diagnosis of depression (Baldwin & Shean, 2008). The results suggested that, for college populations, a cut point of 21 was the most useful in making determinations of a depression diagnosis.

Therefore, the moderating values found in the present study approximate the previously found cut values for low and high levels of depressive symptoms.

Table 9 summarizes the results of the Johnson-Neyman analysis for depression outcomes and lists the moderator values. The table shows that the for individuals with low initial levels of depression both the mixed condition and concrete condition had significantly higher levels of depression than the control at the one-day post-intervention point. At the two-week follow-up, the concrete condition continued to have significantly higher levels of depression for a large portion of people with low-depression scores, but the mixed condition was only significant for conditional values below 2.63. Only two participants in the whole study fell below this point. For individuals with high levels of depression, the mixed condition led to reduced depression compared to the control at both post-intervention and the follow-up. The concrete condition did not differ significantly from the control post-intervention and only differed for extremely high depression scores at the two week follow-up. Of note, only five subjects fell in this range in the whole sample. At no point were there significant differences between the mixed and concrete conditions.

Table 9

Moderator Values for Depression Outcomes

Contrast	Outcome Variable	1st Moderator (Significant Below Value)	Effect on Outcome	2nd Moderator (Significant Above Value)	Effect on Outcome
Mixed-Control	Time 2 CES-D	15.18	Mixed > Control	28.52	Mixed < Control
Concrete-Control	Time 2 CES-D	15.44	Concrete > Control	N.S.	None
Mixed-Concrete	Time 2 CES-D	N.S.	None	N.S.	None
Mixed-Control	Time 3 CES-D	2.63[a]	Mixed > Control	23.11	Mixed < Control
Concrete-Control	Time 3 CES-D	12.59	Concrete > Control	43.06 [a]	Concrete < Control
Mixed-Concrete	Time 3 CES-D	N.S.	None	N.S.	None

Note. This table only displays a summary of the moderator values. N.S. = non-significant findings. [a] = a moderator value that defines a region of significance with very few participants. The 1st Moderator column indicates that a significant region exists for Time 1 CES-D scores below these values. The 2nd Moderator column indicates that a significant region exists for Time 1 CES-D scores above these values. Appendix B.1 includes a more comprehensive list of conditional effects at various points on the Time 1 CES-D.

Rumination.

Tests for Group Differences on Rumination. An additional part of Hypothesis 1 was to determine if the mixed condition led to a significantly greater decrease in rumination than the other two conditions and if the concrete condition led to a greater decrease than the control. In order to evaluate the effectiveness of the intervention on decreasing rumination, an ANCOVA was conducted on Time 2 RRS score with condition as an independent factor and Time 1 RRS score held as a covariate. Preliminary checks

revealed that the assumptions of ANCOVA were tenable, and there were no violations of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of the covariate. The overall ANCOVA for Time 2 RRS score was not significant ($F(2, 237) = .73$, $p = .48$, partial eta squared = .01). A second ANCOVA conducted on Time 3 RRS score with Time 1 RRS as a covariate and condition as an independent variable also was not significant ($F(2, 244) = 1.67$, $p = .19$, partial eta squared = .01). Furthermore, none of the planned comparisons were significant at either time point (all p values > .10). However, the contrast between the mixed condition and the control condition on Time 3 RRS approached significance ($p = .08$)

Exploratory Analysis of Condition by CES-D Interaction for Rumination Outcomes. Based on the interaction between initial CES-D score and condition for the depression outcomes, this same interaction was examined for rumination variables. CES-D score at Time 1 was centered by subtracting the mean score. Condition was recoded into two dummy variables with the first dummy variable coded 1 for the concrete condition, and the second dummy variable coded 1 for the mixed condition. Both dummy variables were multiplied by the centered CES-D score to create interaction terms. As a first step in a sequential regression, Time 2 RRS score was regressed on Time 1 RRS score, CES-D score, dummy variable 1, and dummy variable 2. In the second step, the interaction terms were entered into the regression. The overall regression was significant (adjusted $R^2 = .60$, $F(6, 234)= 60.00$, $p < .001$). The inclusion of the interaction terms led to a significant change in R^2 ($\Delta R^2 =.02$ ($F(2, 234)= 4.32$, $p < .05$). As displayed in Table 10, controlling for Time 1 RRS score, the interaction between Time 1 CES-D and the

mixed-control contrast was significant (β = -.14, $p < .02$). In addition, controlling for Time 1 RRS score, the interaction between Time 1 CES-D and the concrete-control contrast was significant (β = -.17, $p = .01$). Variables were recoded and new interaction terms created to test for an interaction between Time 1 CES-D and the contrast of the mixed and concrete conditions. This interaction was not significant ($p > .85$). Figure 8 displays a graph of the interaction.

Table 10

Regression Coefficients for the Prediction of Post Intervention (Time 2) RRS Scores

	B	Std. Error	Beta	*t*	Sig.
(Constant)	19.11	3.22		5.93	< .001
CES-D (Time 1)	0.59	0.11	0.47	5.20	< .001
RRS (Time 1)	0.56	0.07	0.52	8.18	< .001
Concrete-Control (dummy 1)	-0.96	1.20	-0.04	-0.80	.43
Mixed-Control (dummy 2)	-1.82	1.24	-0.07	-1.47	.14
CES-D x Concrete-Control	-0.34	0.12	-0.17	-2.71	.01
CES-D x Mixed-Control	-0.31	0.13	-0.14	-2.39	.02

Note. CES-D = Center for Epidemiological Studies- Depression Scale, RRS = Ruminative Response Scale, concrete-control (dummy 1) = the dummy coding for the contrast between the concrete and control conditions, mixed-control (dummy 2) = the dummy coding for the contrast between the mixed and control conditions.

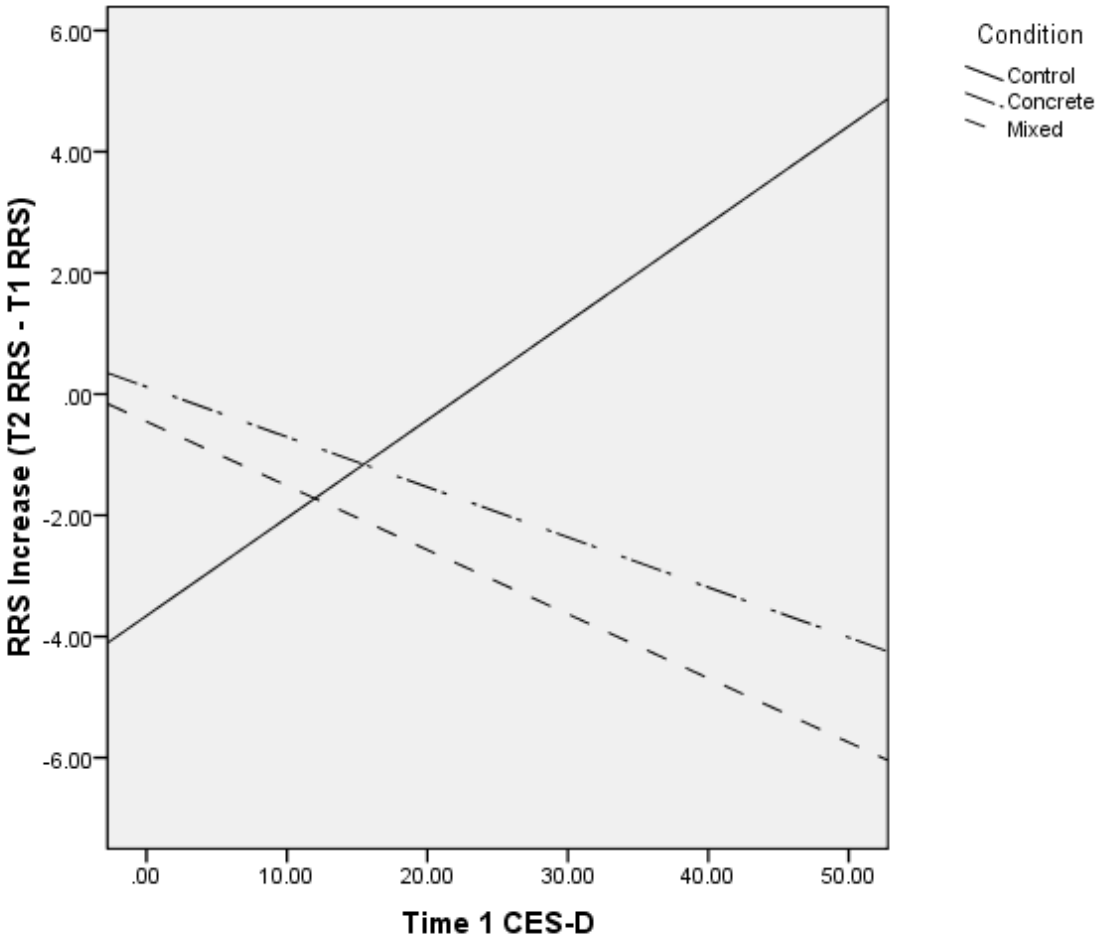

Figure 8. Time 1 CES-D score by RRS increase at Time 2 by condition. This figure shows fit lines by group for Time 1 CES-D score versus the increase in rumination from Time 1 to Time 2. T1 CES-D = Time 1 administration of the Center for Epidemiological Studies- Depression Scale, RRS change = the score on the RRS at Time 2 minus the score on the RRS at Time 1.

Rumination at Time 2: Examination of the Mixed-Control by CES-D Interaction. The significant mixed-control contrast by Time 1 CES-D interaction was examined using the Johnson-Neyman technique. Time 2 RRS score was regressed on Time 1 RRS score,

Time 1 CES-D score, mixed-control contrast, and the interaction term. The overall regression was significant (R^2 = .62, F(4, 154)= 64.24, p <.001). The inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.02 (F(1, 154)= 6.01, p < .05). This indicates that the interaction between initial CES-D Score and the mixed-control contrast accounted for 2% of the variance in Time 2 RRS score. The Johnson-Neyman technique found one moderator value defining significance regions: 20.71. Appendix B.2 contains a more detailed list of conditional effects for specific Time 1 CES-D scores. For participants with Time 1 CES-D scores above 20.71 (35.7% of the sample), controlling for initial rumination, the mixed condition had significantly lower levels of rumination than control condition at Time 2. The effect sizes ranged from .21 to .93, which indicates that depending on the value of the initial CES-D, the effects ranged from small to large. For values below 20.71, assignment to the mixed versus control conditions did not significantly predict subsequent RRS score at Time 2.

Rumination at Time 2: Examination of the Concrete-Control by CES-D Interaction. The interaction for Time 1 CES-D with the contrast between the concrete and control condition was also explored. Time 2 RRS score was regressed on Time 1 RRS score, Time 1 CES-D score, the concrete-control contrast, and the interaction term. The overall regression was significant (R^2 = .61, F(4, 163)= 64.06 , p <.001), and the inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.02 (F(1, 163)= 6.60, p = .01). This indicates that the interaction between initial CES-D score and the concrete-control contrast accounted for 2% of the variance in Time 2 RRS score. The Johnson-Neyman technique found one moderator value defining significance regions:

24.79. There were 50 participants (25% of the sample) that had CES-D scores above 24.79. For these participants, the concrete condition had significantly lower levels of rumination than control condition at Time 2. Cohen's *d* ranged from .25 to .86 for this region of significance, which indicates small to large effects. For values below 24.79, the contrast did not affect subsequent RRS score at Time 2.

Rumination at Time 3. Sequential multiple regression was also used to test the interaction of the conditions with initial CES-D score for Time 3 rumination outcomes. Time 3 rumination score was regressed on Time 1 RRS score, Time 1 CES-D, dummy 1, and dummy 2. In the second step, the interaction terms were entered into the regression. The overall regression was significant (adjusted R^2 = .52, $F(6, 241)$= 46.31, p <.001), and the inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.01 ($F(2, 241)$= 3.43, p < .05). Table 11 shows that both the interactions of Time 1 CES-D with the mixed-control contrast and with the concrete-control contrasts were significant (both p values < .05). The dummy variables were recoded to reflect the mixed versus experiential contrast and new interaction terms were created. The interaction for the mixed-experiential contrast was not significant (p =.75). Figure 9 displays a graph of the interaction.

Table 11

Regression Coefficients for the Prediction of 2-Week Follow-Up (Time 3) RRS Scores

	B	Std. Error	Beta	*t*	Sig.
(Constant)	23.51	3.31		7.09	< .001
CES-D (Time 1)	0.64	0.12	0.53	5.43	< .001
RRS (Time 1)	0.43	0.07	0.41	6.07	< .001
Concrete-Control (dummy 1)	-1.02	1.26	-0.04	-0.81	.42
Mixed-Control (dummy 2)	-2.73	1.32	-0.10	-2.06	.04
CES-D x Concrete-Control	-0.29	0.13	-0.15	-2.23	.03
CES-D x Mixed-Control	-0.33	0.14	-0.15	-2.35	.02

Note. CES-D = Center for Epidemiological Studies- Depression Scale, RRS = Ruminative Response Scale, concrete-control (dummy 1) = the dummy coding for the contrast between the concrete and control conditions, mixed-control (dummy 2) = the dummy coding for the contrast between the mixed and control conditions.

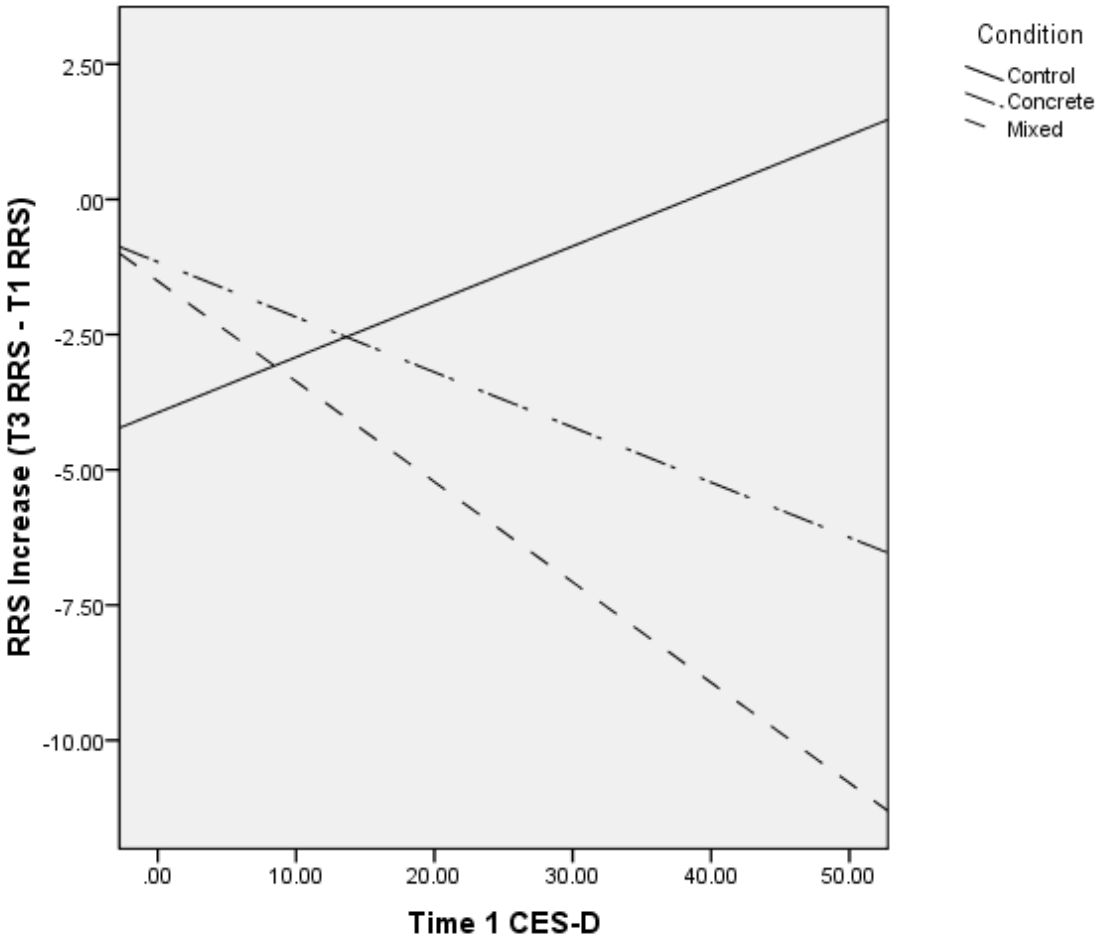

Figure 9. Time 1 CES-D score by RRS increase at Time 3 by condition. This figure shows fit lines by group for Time 1 CES-D score versus the increase in rumination from Time 1 to Time 3. T1 CES-D = Time 1 administration of the Center for Epidemiological Studies- Depression Scale, RRS change = the score on the RRS at Time 3 minus the score on the RRS at Time 1.

Rumination at Time 3: Examination of the Mixed-Control by CES-D Interaction. Time 3 RRS score was regressed on Time 1 RRS score, Time 1 CES-D score, the mixed-control contrast, and the interaction term using the Process SPSS macro. The overall

regression was significant (R^2 = .57, F(4, 155)= 50.79 , p <.001), and the inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.02, F(1, 155)= 6.01, p < .05). This indicates that the interaction between initial CES-D score and the mixed-control contrast accounted for 2% of the variance in Time 3 RRS score. The Johnson-Neyman technique returned one moderator value defining significance regions: 18.01. For participants with Time 1 CES-D scores above 18.01 (48.8% of the sample), the mixed condition had significantly lower levels of rumination than control condition at Time 3. Cohen's *d* ranged from .21 to 1.0, which indicates small to large effects depending on the initial level of depression. For values below 18.01, the condition to which a participant was assigned did not affect subsequent RRS score at Time 3.

Rumination at Time 3: Examination of the Concrete-Control by CES-D Interaction. Time 3 RRS score was regressed on Time 1 RRS score, Time 1 CES-D score, the concrete-control condition, and the interaction term. The overall regression was significant (R^2 = .56, F(4, 170)= 54.01 , p <.001), and the inclusion of the interaction terms led to a significant change in R^2 (ΔR^2 =.01 (F(1, 170)= 4.72, p < .05). This indicates that the interaction between initial CES-D score and the concrete-control contrast accounted for 1% of the variance in Time 3 RRS score. The Johnson-Neyman technique found one moderator value defining significance regions: 26.97. For participants with Time 1 CES-D scores above 26.97 (23% of the sample), the concrete condition had significantly lower levels of rumination than control condition at Time 3. Cohen's *d* ranged from .28 to .86 in this region, which indicates the effects ranged from

small to large depending on the initial level of depression. For values below 26.97, the contrast did not affect subsequent RRS score at Time 3.

Moderator Values Compared with Commonly Used Cut Points. Table 12 summarizes the moderator values and results. As with the CES-D, moderator values seemed to indicate different results for individuals with high and low initial levels of depression. Results suggest that for higher initial levels of depression, the mixed and concrete conditions had lower levels of rumination compared to the control condition at Time 2 and Time 3.

Table 12

Summary of Moderator Values

Contrast	Outcome	Moderator Value (Region of Significance Above)	Significant Findings
Mixed-Control	Time 2 RRS	20.71	Mixed < Control
Concrete-Control	Time 2 RRS	24.79	Concrete < Control
Mixed-Concrete	Time 2 RRS	N.S.	None
Mixed-Control	Time 3 RRS	18.01	Mixed < Control
Concrete-Control	Time 3 RRS	26.97	Concrete < Control
Mixed-Concrete	Time 3 RRS	N.S.	None

Note. This table only displays a summary of the moderator values. Appendix B.2 includes a more comprehensive list of conditional effects at various points on the Time 1 CES-D. N.S. = non-significant findings.

Overgeneral Autobiographical Memory

AMT specificity score remained relatively stable from Time 1 to Time 3. Two ANCOVAs were conducted with Time 1 AMT score as covariate, one on AMT score at

Time 2 and one on AMT score at Time 3. The ANCOVA with AMT score at Time 2 as a dependent variable had a significant result on Levene's test, which tests the null hypothesis that the error variance of the dependent variable is equal across groups. Although this significant finding is a violation of an ANCOVA assumption, the alpha level is considered reasonably accurate if the group sizes are roughly equal (largest/ smallest < 1.5, Stevens, 2009, p. 218). In this case, the largest group had 85 participants and the smallest group had 72, making the groups relatively equal. All other assumptions were met. Thus, ANCOVA is an appropriate statistical measure. Results indicated that neither the Time 2 AMT score ($F(2, 233) = 1.03$, $p = .36$, partial eta squared = .01) nor Time 3 AMT score ($F(2, 240) = 1.04$, $p = .36$ partial eta squared = .01) differed based on group membership. None of the planned comparisons were significant at either time point. Thus, Hypothesis 1 was not supported for OGM outcomes.

Summary of Results for Hypothesis 1

The proposed contrasts were only significant in the hypothesized direction for participants with high initial levels of depression symptoms. For this group, the mixed condition demonstrated lower levels of depression and rumination than the control condition post-intervention and at follow-up. Similarly, the concrete condition had significantly lower *rumination* than the control at Time 2 and Time 3 for participants with higher initial depression. However, the concrete- control contrast was only significant in the proposed direction for depression outcomes at Time 3, and only for participants with extremely high initial depression scores. For individuals with lower Time 1 depression, both the mixed and concrete conditions had higher depression scores than the control at

Time 2. This was not the case at Time 3 for the mixed-control contrast. Appendix B.1 and Appendix B.2 display the depression and rumination results from the Johnson-Neyman analyses for all the significant contrasts. Based on these findings, Hypothesis 1 was partially supported.

Hypothesis 2: The Mediation by Valued-living, Meaning, and Self-Judgment

It was hypothesized that valued-living, personal meaning, and self-judgment would each partially mediate the effects of contrasts between the mixed and the concrete and the mixed and the control conditions on rumination.

Results for Hypothesis 2

Correlations between rumination and mediator variables are presented in Table 13. According to the guidelines outlined by Baron and Kenny (1986), the first step in the mediation analysis would be to establish treatment differences for RRS score. Based on analysis from Hypothesis 1, there is no relationship between the condition to which a participant was assigned and rumination at Time 2 or Time 3 for the whole group. Thus, the mediation analysis would be unsuccessful with any of the proposed mediators for the sample as a whole. Depending on initial CES-D, regions of significance score were found for mixed-control treatment effects on RRS score. Consequently, a moderated mediation could be relevant.

Table 13

Means, Standard Deviations, and Inter-correlations of Rumination and Proposed Mediator Variables for the Whole Group

Study Variables	1	2	3	4	5	6	7	8	9
1. RRS Time 1	-	.75**	-.16*	-.26**	.41**	.68**	-.17**	-.24**	.38**
2. RRS Time 2		-	-.18**	-.29**	.47**	.80**	-.23**	-.22**	.41**
3. MMS Time 2			-	.28**	-.01	-.16*	.65**	.23**	.08
4. VLQ Time 2				-	-.13*	-.29**	.33**	.69**	-.06
5. KIMS Time 2					-	.47**	-.01	-.04	.65**
6. RRS Time 3						-	-.22**	-.19**	.50**
7. MMS Time 3							-	.39**	.07
8. VLQ Time 3								-	-.02
9. KIMS Time 3									-
n	252	241	241	241	241	248	248	248	248
M	45.04	43.42	29.51	55.52	27.13	41.66	29.46	55.95	26.30
SD	11.46	12.26	4.64	16.50	7.25	12.04	4.21	16.98	7.13

Note. MMS = Meaning Making Scale, RRS = Ruminative Response Scale, VLQ = Valued Living Questionnaire – composite score, KIMS = Kentucky Inventory of Mindfulness – Accept without Judgment Scale.

Analytic Strategy

Moderated mediation analysis was conducted for the mixed-control treatment differences with each mediator included in turn and Time 1 CES-D score as a moderator. Figure 10 and Figure 11 display the basic structure for the moderated mediation that was conducted with each of the MMS, KIMS, and the VLQ as mediator variable.

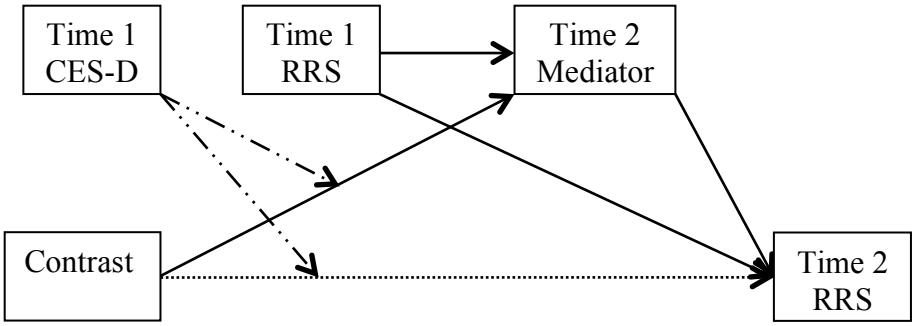

Figure 10. Moderated mediation analysis for Time 2 RRS outcomes. RRS = Ruminative Response Scale. The mixed-control contrast effects on Time 2 RRS will be examined in three separate analyses, one for each mediator (MMS, the VLQ, and the KIMS). −·> indicates the proposed moderation. ····> indicates the proposed mediation.

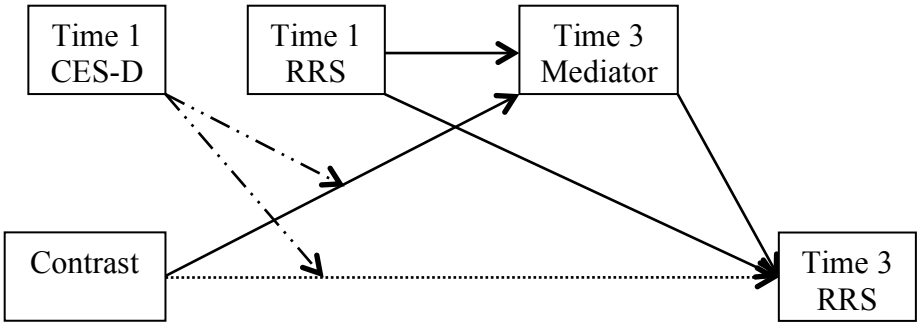

Figure 11. Moderated mediation analysis for Time 3 RRS outcomes. RRS = Ruminative Response Scale. The mixed-control contrast effects on Time 3 RRS will be examined in three separate analyses, one for each mediator (MMS, the VLQ, and the KIMS). −·> indicates the proposed moderation. ····> indicates the proposed mediation.

Moderated mediation analysis provides tests of conditional indirect effects at specific levels of a moderator (Hayes, 2012). For example, the moderated mediation analysis displayed in Figure 10 allows for the estimation of the indirect effect of the treatment

differences on Time 2 RRS through the mediator (e.g., the MMS) depending on specific Time 1 CES-D scores. The analysis in Figure 10 also controlled for Time 1 RRS score. Hay's Process SPSS macro was used to conduct the moderated mediation analysis. The output from the Process macro provides the results of two regression analyses and the conditional direct and indirect effects of the predictor on the outcome variable for various points on the mediator. In the first regression analysis the mediator (e.g., Time 2 MMS) is regressed on the predictor (e.g., mixed-control contrast), an interaction term (e.g., mixed-control contrast x Time 1 CES-D), the moderator (e.g., Time 1 CES-D), and any variables controlled for (e.g., Time 1 RRS). The output also includes the results of a second regression of the outcome (e.g., Time 2 RRS) on the mediator, the predictor, the interaction term, the moderator, and any variable controlled for.

One of the challenges of this type of analysis is that the direct and indirect effects are conditional upon Time 1 CES-D score. Hayes (2012) recommends probing the effects at points corresponding to particular scores on the moderator. The Process SPSS macro automatically tests effects at points corresponding to the 10th, 25th, 50th, 75th, and 90th percentiles on the moderator. Bootstrapping is used to calculate 95% confidence intervals for the indirect treatment effects on the outcome at these select points. Bootstrapping is a process by which smaller samples are repeatedly taken from a larger sample to calculate empirical estimates of standard errors and confidence intervals (Keith, 2006). This study used 1000 samples to estimate the confidence intervals. In cases where the confidence interval does not contain the value of zero in its range, a significant effect has occurred (i.e., the treatment effects are not zero with 95% confidence). In order for a moderated

mediation to occur in the model we are using, the interaction of the predictor and moderator must be significant on either the mediator or the outcome, and there must be significant indirect effects from the predictor to the outcome variable (Hayes, 2012).The moderated mediation analysis was conducted at both Time 2 and Time 3.

Results of the moderated mediation analyses. As part of the moderated mediation, each of the MMS, VLQ, and KIMS were separately regressed on Time 1 RRS, Time 1 CES-D, the interaction term, and the mixed-control contrast. The interaction term was not a significant predictor for any of the mediators at either Time 2 or Time 3 (all *p* values >.05). As in Hypothesis 1, the interaction of Time 1 CES-D and the mixed-control contrast was a significant predictor of both Time 2 RRS and Time 3 RRS controlling for Time 1 RRS and the mediators (all *p* values < .05). However, there were no significant indirect effects at any of the selected Time 1 CES-D scores tested. Appendix B.3 contains the conditional indirect and direct effects for different values of Time 1 CES-D. As there were not interactions between the mixed-concrete contrast and Time 1 CES-D on any of the mediators, additional models were run, which were identical to the ones in Figures 10 and 11 except that the interactions on mediators were omitted. The interaction between the mixed-concrete contrast and Time 1 CES-D on rumination was retained in these models. Once again, there were no significant indirect effects through the mediators (all *p* values >.05).

Summary of Results for Hypothesis 2

Based on these findings, there is no evidence that the MMS, VLQ, or the KIMS mediated the treatment differences on rumination at either Time 2 or Time 3. As such, Hypothesis 2 was not supported.

Hypothesis 3: Rumination Mediates the Effects of the Intervention on Overgeneral Autobiographical Memory

It was hypothesized that rumination would mediate the effects of the treatments on autobiographical overgeneral memory specificity assessed at post-intervention (Time 2) and at follow up (Time 3). Specifically, it was predicted that participants in the mixed and concrete treatment conditions would display a reduction in rumination, which in turn would be associated with a decrease in overgeneral autobiographical memory.

Results for Hypothesis 3

The first requirement for a mediation to have occurred is for there to be a significant treatment difference for AMT score. As demonstrated in the analysis for Hypothesis 1, condition did not differ on AMT score at Time 2 or Time 3, and thus, a mediation is not possible. Therefore, there is no evidence to support Hypothesis 3.

Hypothesis 4: Rumination Mediates the Effect of the Treatment on Depressive Symptoms

It was predicted that rumination would partially mediate the effects of the treatment on depressive symptoms at Time 2 and Time 3. Specifically, participants in the mixed and concrete conditions were expected to display a decrease in rumination at Time 2 and Time 3 compared to the control condition, which in turn will be associated with a decrease in depressive symptoms at Time 2 and Time 3 respectively.

Results for Hypothesis 4

As discussed in the results for Hypothesis 1, there were significant interactions between the conditions and Time 1 CES-D for depression and rumination outcomes. Therefore, moderated mediation analyses were conducted as shown in Figure 12 and Figure 13.

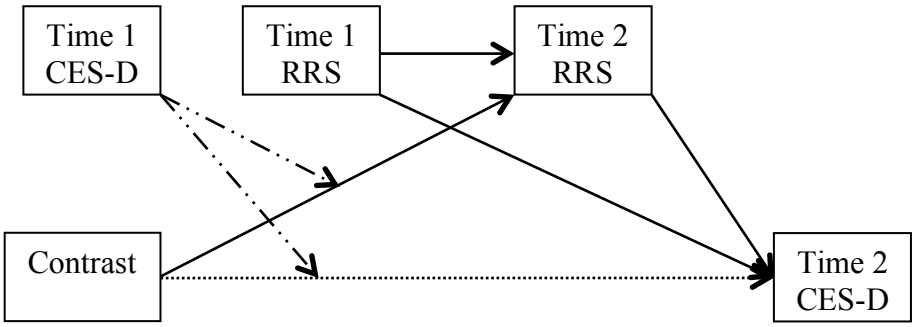

Figure 12. Moderated mediation analysis for Time 2 CES-D outcomes. CES-D = Center for Epidemiological Studies- Depression Scale, RRS = Ruminative Response Scale, two different contrasts will be examined in separate analysis: the mixed-control contrast and the concrete-control contrast. −·→ indicates the proposed moderation. ·····→ indicates the proposed mediation.

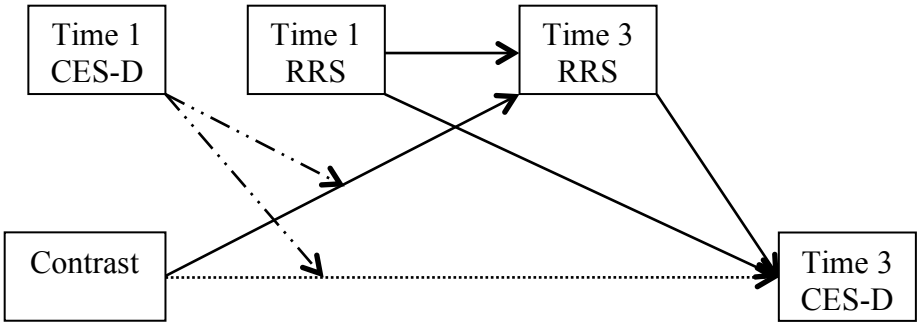

Figure 13. Moderated mediation analysis for Time 3 CES-D outcomes. CES-D = Center for Epidemiological Studies- Depression Scale, RRS = Ruminative Response Scale, two different contrasts will be examined in separate analysis: the mixed-control contrast and the concrete-control contrast. –·> indicates the proposed moderation. ····> indicates the proposed mediation.

Analytic Strategy

As in Hypothesis 2, a moderated mediation analysis was conducted using the Process SPSS macro (Hayes, 2012). The moderated mediation analysis allows for the estimation of the indirect treatment effects on post-intervention CES-D through post-intervention RRS, depending on specific Time 1 CES-D scores. This analysis also controlled for Time 1 RRS score. In order for a moderated mediation to occur, the interaction of the predictor and moderator on the mediator or on the outcome must be significant, and there must be significant indirect effects from the predictor to the outcome variable (Hayes, 2012). The direct and indirect effects were tested at points corresponding to the 10th, 25th, 50th, 75th, and 90th percentiles on the Time 1 CES-D. The macro also allowed for the testing of particular points as well. This made it possible for the moderator values found in Hypothesis 1 for CES-D outcomes to also be tested for

effects. Means used in the interaction terms were centered to avoid multicolinearity. The moderated mediation analysis was conducted at both Time 2 and Time 3 and for both the mixed-control and concrete-control contrasts.

Time 2 Mediation of Mixed-Control Treatment Differences on CES-D by RRS. Appendix B.4 contains the complete results for this moderated mediation analysis. Table 14 displays the direct and indirect effects at specific percentiles of Time 1 CES-D. As shown in Appendix B.4, the interaction between Time 1 CES-D score and the mixed-control contrast was a significant predictor of Time 2 RRS score ($p < .05$). Furthermore, because the 75th and 90th percentiles do not include zero in the corresponding confidence intervals, there are significant indirect effects at these points (See Table 14). Thus, a moderated mediation has occurred. Additionally, starting at a value of 24 (for Time 1 CES-D), the indirect effects were significant and increased for higher values of depression. This finding is confirmed by the tests at the previously found cut point (28.52) and at the 90th percentile. Although the indirect effects were significant, the direct effects were not. This indicates that a full mediation occurred for scores above 24 on the Time 1 CES-D. These findings suggest that for individuals with higher levels of depression (approximate CES-D score > 24), the treatment differences for the mixed-control contrast on Time 2 CES-D were explained by the treatment effects of the contrast on Time 2 RRS controlling for initial level of rumination.

Table 14

Conditional Effects of Mixed-Control Contrast on Time 2 CES-D from the Mediation Moderation Analysis

		Direct				Indirect			
Percentile	T1 CES-D	Direct Effects	*SE*	*t*	*p*	Indirect Effects	Boot *SE*	Boot LLCI	Boot ULCI
10	8.00	4.29	1.25	3.44	< .01	0.92	0.86	-0.66	2.72
25	11.00	3.64	1.06	3.42	< .01	0.35	0.72	-1.05	1.86
50	17.00	2.35	0.84	2.80	.01	-0.78	0.66	-2.20	0.45
75	24.00	0.85	0.96	0.88	.38	-2.09	0.99	-4.24	-0.32
	28.52	**-0.13**	**1.21**	**-0.11**	**.92**	**-2.95**	**1.38**	**-5.59**	**-0.15**
90	32.00	-0.88	1.45	-0.60	.55	-3.60	1.56	-7.12	-0.97

Note. T1 CES-D = Score on the Time 1 administration of the Center for Epidemiological Studies-Depression Scale, Boot *SE* = the standard error that resulted from the bootstrap analysis, BootLLCI = the bootstrapped lower limit of the 95% confidence interval for the indirect effect at the conditional point listed, BootULCI = the bootstrapped upper limit of the 95% confidence interval for the indirect effect at the conditional point listed. The bolded row indicates that the Time 1 CES-D value tested was a moderator value from the Hypothesis 1 analysis.

Time 2 Mediation of Concrete-Control Treatment Effects on CES-D by RRS. Appendix B.5 contains the complete results for this moderated mediation analysis. Table 15 displays the direct and indirect effects at specific percentiles of Time 1 CES-D. As shown in Appendix B.5, the interaction between Time 1 CES-D score and the concrete-control contrast was a significant predictor of Time 2 RRS score ($p < .05$). However, as all the confidence intervals contain zero, there are no significant indirect effects at this point (See Table 15). Therefore, a mediation has not occurred at this point. This result is consistent with previous findings. The only significant region for the concrete-control contrast on Time 2 CES-D was below a Time 1 CES-D score of 15.44. The region of significance for the concrete-control contrast on Time 2 RRS was above a Time 1 CES-D score of 24.79. Thus, at Time 2, the concrete-control contrast was never a significant

predictor of depression and rumination for the same values of Time 1 CES-D. As such, a mediation could not occur.

Table 15

Conditional Effects of Concrete-Control Contrast on Time 2 CES-D from the Mediation Moderation Analysis

		Direct				Indirect			
Percentile	T1 CES-D	Direct Effects	*SE*	*t*	*p*	Indirect Effects	Boot *SE*	Boot LLCI	Boot ULCI
10	7.00	2.63	1.23	2.15	.03	1.70	0.93	-0.10	3.54
25	11.00	2.41	1.00	2.42	.02	0.92	0.74	-0.57	2.36
50	17.00	2.07	0.81	2.57	.01	-0.25	0.72	-1.64	1.26
75	24.00	1.69	0.95	1.78	.08	-1.61	1.08	-3.80	0.59
90	32.00	1.24	1.43	0.87	.39	-3.17	1.69	-6.68	0.02

Note. T1 CES-D = Score on the Time 1 administration of the Center for Epidemiological Studies-Depression Scale, Boot *SE* = the standard error that resulted from the bootstrap analysis, BootLLCI = the bootstrapped lower limit of the 95% confidence interval for the indirect effect at the conditional point listed, BootULCI = the bootstrapped upper limit of the 95% confidence interval for the indirect effect at the conditional point listed.

Time 3 Mediation by RRS of the Mixed-Control Treatment Effects on CES-D. Appendix B.6 contains the complete results for this moderated mediation analysis. Table 16 displays the direct and indirect effects at specific percentiles of Time 1 CES-D. As shown in Appendix B.6, the interaction between Time 1 CES-D score and the mixed-control contrast was a significant predictor of Time 3 RRS score ($p < .05$), while controlling for initial RRS score. Furthermore, because the previously found cut point (23.91) does not include zero, there are significant indirect effects at this point (See Table 16). Thus, a moderated mediation has occurred. Indirect effects increased for higher values of CES-D. Additional tests at the 75th and 90th percentiles confirmed the increase in indirect effects. Above the values of 23.91, the indirect effects were significant and the direct effects were

not. This indicates that a full mediation occurred above this value. These findings suggest that for individuals with higher levels of depression (approximate CES-D score > 24), the treatment differences for the mixed-control contrast on Time 3 CES-D were explained by the treatment effects of the contrast on Time 3 RRS, while controlling for initial level of rumination.

Table 16

Conditional Effects of Mixed-Control Contrast on Time 3 CES-D from the Mediation Moderation Analysis

		Direct				Indirect			
Percentile	T1 CES-D	Direct Effects	*SE*	*t*	*p*	Indirect Effects	Boot *SE*	Boot LLCI	Boot ULCI
10	8.00	2.04	1.25	1.63	.10	0.48	1.01	-1.30	2.76
25	11.00	1.66	1.07	1.55	.12	-0.14	0.85	-1.70	1.85
50	17.00	0.90	0.85	1.06	.29	-1.39	0.76	-2.92	0.18
	23.11	**0.13**	**0.94**	**0.14**	**.89**	**-2.66**	**1.05**	**-4.71**	**-0.53**
75	24.00	0.01	0.98	0.02	.99	-2.84	1.07	-5.02	-0.83
90	32.00	-1.00	1.47	-0.68	.50	-4.50	1.66	-7.70	-1.44

Note. T1 CES-D = Score on the Time 1 administration of the Center for Epidemiological Studies-Depression Scale, Boot *SE* = the standard error that resulted from the bootstrap analysis, BootLLCI = the bootstrapped lower limit of the 95% confidence interval for the indirect effect at the conditional point listed, BootULCI = the bootstrapped upper limit of the 95% confidence interval for the indirect effect at the conditional point listed. The bolded row indicates that the Time 1 CES-D value tested was a moderator value from the Hypothesis 1 analysis.

Time 3 Mediation of the Concrete-Control Treatment Effects on CES-D by RRS.

Appendix B.7 contains the complete results for this moderated mediation analysis. Table 17 displays the direct and indirect effects at specific percentiles of Time 1 CES-D. As shown in Appendix B.7, the interaction between Time 1 CES-D score and the concrete-control contrast was a significant predictor of Time 3 RRS score ($p < .05$) controlling for initial RRS score. Furthermore, because the confidence interval for the selected cut point

of 43.06 does not include zero, there is a significant indirect effect at this point (See Table 17) and a moderated mediation has occurred. As only five participants in the sample had Time 1 CES-D scores above 43, these findings must be interpreted cautiously. These findings may suggest that for individuals with very high levels of depression (approximate CES-D score > 43), the treatment differences for the concrete-control contrast on Time 3 CESD were explained by the treatment effects of the contrast on Time 3 RRS, while controlling for initial level of rumination.

Table 17

Conditional Effects of Concrete-Control Contrast on Time 3 CES-D from the Mediation Moderation Analysis

		Direct				Indirect			
Percentile	T1 CES-D	Direct Effects	*SE*	*t*	*p*	Indirect Effects	Boot *SE*	Boot LLCI	Boot ULCI
10	7	2.84	1.33	2.13	.03	1.49	1.18	-0.72	4.01
25	11	2.41	1.09	2.22	.03	0.75	0.96	-0.99	2.82
50	16	1.88	0.90	2.09	.04	-0.19	0.84	-1.78	1.46
75	24	1.03	1.03	1.00	.32	-1.68	1.07	-3.68	0.46
90	32	0.18	1.53	0.11	.91	-3.18	1.61	-6.25	< .01
	43.06	**-1.00**	**2.42**	**-0.41**	**.68**	**-5.25**	**2.55**	**-10.59**	**-0.63**

Note. T1 CES-D = Score on the Time 1 administration of the Center for Epidemiological Studies-Depression Scale, Boot *SE* = the standard error that resulted from the bootstrap analysis, BootLLCI = the bootstrapped lower limit of the 95% confidence interval for the indirect effect at the conditional point listed, BootULCI = the bootstrapped upper limit of the 95% confidence interval for the indirect effect at the conditional point listed. The bolded row indicates that the Time 1 CES-D value tested was a moderator value from the Hypothesis 1 analysis.

Summary of Hypothesis 4 Results

The results suggest that, generally, for participants with higher initial levels of depression, the significant treatment effects found for depression are fully mediated by the treatment effects on rumination. A caveat to these findings is that, although the

Johnson-Neyman moderator values found in Hypothesis 1 were inputted into the moderated mediation analysis, the two analyses are not parallel; the moderated mediation analysis controlled for Time 1 RRS and the mediator, whereas the Johnson-Neyman analysis for depression outcomes did not. This explains how there were indirect effects below the previously found region of significance for the mixed-control analysis on Time 2 depression. Still, the results indicate that controlling for Time 1 RRS, a full mediation occurred for the mixed-control contrasts on depression at both Time 2 and Time 3 for all Time 1 CES-D values higher than 24. For low values of initial depression, rumination outcomes did not have any regions of significance. Hence, a mediation of the treatment effects on depression outcomes could not occur at those points. As such, Hypothesis 4 was partially supported.

CHAPTER 5

Discussion

Were the Interventions Effective in Reducing Distress?

The first hypothesis predicted that combining concrete and abstract processing when thinking about negative experiences would reduce distress. Specifically, Hypothesis 1a proposed that participants adopting this mixed abstract and concrete perspective would have lower levels of rumination, depression, and overgeneral autobiographical memory compared to participants in the traditional concrete condition and the control condition. Hypothesis 1b proposed that the traditional concrete condition would also have advantages when compared to the control condition.

The study provided preliminary evidence that adopting a mixed perspective can be effective in decreasing distress; both the mixed condition and the concrete condition displayed some advantages over the control condition for people with higher initial levels of depression. These benefits were observed for rumination and depression symptoms but not for overgeneral autobiographical memory. It is important to note that benefits depended on initial levels of depression, with both the mixed and concrete conditions only demonstrating advantages for higher pre-intervention levels of depression. Although both the mixed and concrete groups performed significantly better than the control in reducing *rumination* for this group, only the mixed condition led to better *depression* outcomes than the control for a substantial number of participants with higher pre-intervention depression.

The conditional benefits of the mixed perspective might be due to differences in the abilities of depressed and non-depressed participants to traverse the goal hierarchy. It was proposed that the mixed condition would reduce rumination by moving participants through the abstract and concrete levels of the hierarchy, thereby creating more connections and more organized action. Two recent studies suggest that, when confronted with sad content and negative emotions, depressed individuals maintain thought at the abstract level, whereas non-depressed individuals tend to shift thinking toward the concrete level (Takano & Tanno, 2009; Watkins, Moberly, & Moulds, 2011). This could indicate that non-depressed individuals automatically traverse the hierarchy, whereas depressed individuals become stuck at the abstract level (Watkins, Moberly, & Moulds, 2011). If this is the case, the conditions might not have differed for participants with low pre-intervention depression because they already dealt with the negative experiences by moving between the abstract and concrete levels. In contrast, treatment effects could exist for more depressed participants, who needed the encouragement of the mixed condition to traverse the hierarchy.

Although differences between the mixed and the concrete conditions at higher levels of initial depression were in the expected direction, these differences were not statistically significant: Neither first order effects or interactions with initial depression were found. The fact that the mixed condition did not produce significantly better outcomes than the concrete condition is disappointing in that results do not suggest that the addition of abstract, values-directed thinking improved upon the concrete condition. However, it is important to note that the inclusion of abstract thought in the mixed

condition did not have adverse effects compared to the concrete condition. Several researchers have found that abstract thought about negative content leads to more rumination and depression than concrete thought (Moberly & Watkins, 2006; Raes, Watkins, Williams, & Hermans, 2008; Rimes & Watkins, 2005; Watkins, 2004; Watkins, Moberly, & Moulds, 2008; Watkins & Moulds, 2005; Watkins & Teasdale, 2001, 2004). In contrast to these findings, the results indicate that abstract thought, albeit in combination with concrete thought, did not increase rumination and depression compared to the concrete condition. In fact, the mixed condition had a greater long-term reduction in rumination on average compared to the concrete condition (though not significantly greater). Therefore, the findings are more in line with researchers who argue that abstract thought is not always detrimental (Kross & Ayduk, 2005; Rude et al., 2011).

A harder question to answer is whether the mixed condition was only beneficial because it included a concrete component. Because the mixed-concrete contrast was not significant at any point, there can be no definitive answer as to whether one condition was more beneficial. Consistent with previous studies that found that concrete interventions are beneficial for individuals with dysphoria, the concrete condition demonstrated reductions in rumination compared to the control for individuals with higher pre-intervention depression. (Watkins, Baeyens, & Read, 2009; Watkins & Moberly, 2009). However, the concrete condition did not have benefits for depression at post-intervention, and at the two week follow-up, only differed from the control condition for a handful of extremely depressed participants (less than 2% of the sample was in this range at Time 3). On the other hand, the mixed condition compared to the control

condition had significant reductions in depression for a large portion of participants with high pre-intervention depression (28% of the sample fell above the cut point at Time 3). Hence, there could be some unique benefit to the mixed condition that translates into these depression outcomes.

This study was the first to encourage a mixed abstract and concrete perspective as a means to decrease rumination. Separate studies have found benefits to certain types of abstract thought and certain types of concrete thought, but no study has explicitly combined the beneficial aspects of the two (Kross & Ayduk, 2005; Rude et al., 2011; Watkins, Baeyens, & Read, 2009; Watkins & Moberly, 2009). The theoretical basis for the proposed advantages of the mixed condition was grounded in Control Theory. Control Theory contends that rumination occurs when negative experiences highlight a lack of progress toward important higher-level goals within a goal hierarchy (Martin & Tesser, 2006). Watkins argues that concrete interventions are beneficial in that they allow individuals to focus on concrete actions and problem solving and avoid abstract questions of "why." It was proposed that the mixed condition, by including beneficial abstract thought and by traversing the abstract and concrete levels, would help individuals create more organized connections in their goal hierarchy and discover additional concrete ways to resume progress towards goals. However, direct comparisons did not support differences between the mixed and concrete conditions, and it is unclear if the inclusion of the exploration of values led to any advantages in the mixed condition. Although both mixed condition and concrete condition may have asked individuals to traverse the goal hierarchy, the mixed condition did so to a greater extent. Thus, if an advantage did exist

for the mixed condition on depression outcomes, it might be tied to the increase in connections between the levels.

Unexpected Adverse Effects for Participants with Lower Pre-Intervention Depressive Symptoms

An unexpected finding of the study was that non-depressed participants had higher post-intervention depression in the mixed condition and the concrete condition compared to the control. This effect was not observed at the two-week follow-up for the mixed-control contrast. One explanation for these findings is that repeatedly concentrating on negative experiences might have been outside the norm for non-depressed participants; therefore, the interventions might have made negative content and emotions more salient than usual. One difference between the conditions was that the control condition asked participants to think about negative experiences, but subsequently, write about an unrelated topic. Thus, participants in the control condition may have been distracted from the negative experiences, whereas participants in the mixed and control condition may have focused more directly on the negative experiences.

Research is varied as to the benefits of distraction. Some studies find distraction scales positively correlated with depression (e.g., Schmaling, Dimidjian, Katon, & Sullivan, 2002), whereas others find it negatively correlated (e.g., Lam, Smith, Checkley, Rijsdijk, & Sham, 2003). In addition, Wenzlaff and Wegner (2000) have suggested that the positive effects of distraction are temporary and distraction may lead to worse outcomes long-term. This would explain why the mixed condition was no longer significantly different from the control at the two-week follow-up. However, research has

also found that the benefits from distraction only exist for participants with active depression (Kuehner, Huffziger, & Liebsch, 2009; Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Lyubomirsky et al., 1999; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993). Therefore, it is unclear whether the increase in depression was due to the more concentrated focus on negative content in the mixed and concrete conditions or due to beneficial aspects of distraction in the control condition.

Importantly, the negative effects for the mixed condition were not lasting. By the two-week follow-up, the mixed condition no longer significantly differed from the control condition. This might indicate that once participants were no longer asked to repeatedly focus on negative experiences, their mood improved. This fits with the hypothesis that a repeated sad mood induction might account for the higher levels of post-intervention depression. Interestingly, the concrete condition still differed from the control condition at the follow-up for a large proportion of participants with low pre-intervention depression. As the concrete condition asked participants to go into more detail about their experiences than the mixed condition, it could be that the mood response was stronger in the concrete condition, and thus, the effects more lasting.

Overgeneral Autobiographical Memory

The results failed to support the hypothesis that the mixed and concrete conditions would decrease overgeneral autobiographical memory compared to the control. This is surprising as several studies found benefits to concrete thought in reducing overgeneral autobiographical memory (Raes, Watkins, Williams, & Hermans, 2009; Watkins & Teasdale, 2001). Additionally, overgeneral autobiographical memory was not correlated

with rumination or depression at any single measurement point. This is inconsistent with most previous studies that suggest rumination is a key component of overgeneral autobiographical memory and that overgeneral autobiographical memory predicts the severity and likelihood of future depression (Hermans et al., 2008; Gibbs & Rude, 2004; Sumner, Griffith, & Mineka, 2010; Sumner et al., 2011; Williams, 2007). However, there have also been several studies that have failed to demonstrate that OGM concurrently or prospectively predicts depressed populations (Brewin, Reynolds, & Tata, 1999; Dalgleish, Spinks, Yiend, & Kuyken, 2001; Iqbal, Birchwood, Hemsley, Jackson, & Morris, 2004; Kaney, Bowen-Jones, & Bentall, 1999). As there were no treatment effects, the proposed hypothesis that treatment differences in overgeneral autobiographical memory would be mediated by changes in rumination was not supported.

Some researchers recently suggested that the Autobiographical Memory Task may not have the desired sensitivity in non-clinical samples (Raes, Hermen, Williams, & Eelen, 2007). In examining previous studies with non-clinical participants, they suggest ratios of overgeneral memories to total memories of .21 - .46 were too low to be clinically predictive. The ratio of baseline overgeneral memories to total memories in the present sample was .17 ((12-9.94)/12), which is an even lower ratio. Therefore, it is possible that for the present sample, the AMT was not sensitive enough to be an effective measure. These same authors suggest that providing participants with less specific instructions might increase the sensitivity in college populations (Raes, Hermen, Williams, & Eelen, 2007). They have created an instrument called the SCEPT, which uses the ambiguity of sentence completion. As instructions for the Autobiographical

Memory Task in this study were presented both in written and video format, it could be that the instructions were too thorough for this population and decreased sensitivity. If this is the case, it would explain the lack of treatment differences and the lack of correlation with rumination and depression.

Did Changes in Rumination Explain Depression Outcomes?

The results suggest that, for most individuals with high initial levels of depression, changes in rumination generally explained changes in depression. The analysis examined if, depending on pre-intervention depression level and accounting for pre-intervention rumination, treatment differences on post-intervention depression scores were mediated by post-intervention rumination. The findings indicate that, for participants with higher initial depression, the reductions in depression were fully mediated by the reductions in rumination, such that the mixed condition led to reductions in depression through reducing rumination. Rumination has been shown to predict the likelihood and severity of depression (McIntosh & Martin, 1992; Nolen-Hoeksema, 2000; Spasojevic & Alloy, 2001). Furthermore, several studies demonstrate that rumination often mediates the effects of other predictors of depression (Lo, Ho, & Hollon, 2008; McLaughlin & Nolen-Hoeksema, 2011; Szasz, 2009). Thus, the findings for individuals with high initial levels of depression are consistent with previous literature. Interestingly, the changes in depression for individuals with low levels of initial rumination were not explained by changes in rumination. This could indicate that some other factor besides changes in rumination accounted for the higher levels of depression at post-intervention for that group.

Through What Mechanisms Did the Mixed Condition Reduce Rumination Levels?

The hypothesis that changes in meaning making, self-judgment, and valued living would partially mediate the changes in rumination was not supported. Overall, the mixed condition did not differ from the concrete or control condition in post-intervention rumination, and thus, mediation was not supported for the sample as a whole. For individuals with higher pre-intervention depression, the mixed condition did have significantly lower rumination than the control. Therefore, several mediators were explored using a moderated mediation analysis.

The results were not significant for any of the proposed mediations. This is surprising as several authors have suggested that the creation of meaning and fostering a non-judgment perspective are advantages of certain types of abstract thought (Kross & Ayduk, 2011; Rude et al., 2011). Furthermore, the Valued Living Questionnaire was selected as a way to measure the degree to which participants' higher-level values were connected to their actions. As the mixed condition directly asked participants to explore their values, it is also surprising that this measure did not partially explain changes in rumination. Based on the findings, it is unclear if the mixed condition reduced rumination through any of these mechanisms.

Strengths of Study

There are a number of strengths for the present study. First, the study employed a large sample size. This lent sufficient experimental power for the statistical tests. In addition, because prescreening questions were included, the sample may have had higher levels of initial rumination and depression than the average college sample.

Another strength of the study is that the interventions asked participants to think about "real life" experiences that were bothering them. This allowed participants to be more invested in the study than if hypothetical situations were used. Moreover, the use of personal experiences allowed the results to be more generalizable to a therapeutic setting.

The study also utilized a randomized control design. This type of design is one of the most rigorous for between group comparisons and allows for inferences to be made about treatment differences while controlling for many confounding factors. Because both a control and a concrete condition were included, inferences could be made about whether improvements in the mixed condition could be related to existing interventions. Furthermore, taking outcome measurements at multiple time points allowed for an examination of the stability of the findings.

Limitations

A main limitation is that the sample used in this study makes generalizing results more difficult. The study was comprised entirely of college students with a mean age of approximately 21. It is uncertain how the results will generalize to older and younger populations. The racial/ethnic makeup of the sample also limits generalizability as many different groups were underrepresented. For example, no African-American participants were randomly assigned to the mixed condition. In addition, college populations are unique in socioeconomic status and education compared to other populations. As such, the types of bothersome negative experiences that participants wrote about in this study might not be typical for other populations. For instance, 21% of the sample's bothersome experiences were related to academic concerns and only one participant wrote about

experiences concerning parenting. It is uncertain how writing about different types of events might affect rumination and depression outcomes.

A second limitation that arose from the sample is that the number of participants with very high levels of depression was fewer than desired. For example, a CES-D moderator value of 43 was found for concrete-control treatment differences on Time 3 depression score. Only 5 participants in this sample fell above this point, which makes the findings very susceptible to extreme values and difficult to generalize.

Another limitation is that encouraging different levels of processing may not be effective for all types of negative experience. This study asked participants to examine negative experiences with the hope that, by learning to process them in a new way, they could avoid rumination. However, it is unclear whether processing events in a different way would be an effective tool against systematic bias or the societal barriers that someone might face. One of the proposed advantages of the mixed condition was that it would help participants discover alternative ways to move toward higher level goals. In cases involving systematic oppression, where there are no alternative actions, it is unclear if the condition would have the desired effect.

The study is also limited in that the majority of constructs in this study were operationalized using self-reported measures. Self-report measures are subject to the participants' biases, accuracy, and honesty. Because participants in this sample were assigned to the study in return for course credit, the accuracy of their responses is a particular concern and their investment in the study may be low. An attempt was made to remove participants who gave inaccurate responses, but this step was based largely on

participants' self-reported honesty and accuracy. Self-report measures may also be subject to demand characteristics. This problem is somewhat mitigated for the condition comparisons by the use of a randomized control. However, these issues may be more problematic when drawing conclusions about the within factor (i.e., changes over time).

An additional limitation may be the conditions selected for inclusion in the study. The control condition did not write as much about their negative experiences as did the concrete and mixed condition. In designing the control condition it was difficult to strike a balance between having participants think about a negative experience, but write about it in a way that did not change the level of processing and did not encourage rumination. Therefore, the current control condition had participants write about their daily activities. It could be argued that this served as a distraction intervention, which may have added a confounding factor. Furthermore, whereas participants in the control condition thought about their experiences and wrote briefly about them, the majority of the writing in the control condition was about an unrelated topic (e.g., what they did on a typical Monday). Cognitive processing theory suggests that writing about negative experiences helps individuals process emotions and assimilate experiences into their cognitive framework (Jones & Pennebaker, 2006; Pennebaker, 1997). Several studies have found that expressive writing is useful in reducing rumination, negative affect, and depressive symptoms (Baikie, Geerligs, & Wilhelm, 2012; Gortner, Rude, & Pennebaker, 2006; Langens & Schüler, 2005; Lepore, 1997; Soliday, Garofalo, & Rogers, 2004). Therefore, it is important to acknowledge that the mixed and concrete conditions could have had benefits that were connected to the expressive writing.

Conclusions and Future directions

In conclusion, this study suggests that initial depressive symptoms may be important when selecting treatments targeting rumination and depression. Interventions that combine abstract and concrete thought appear beneficial in reducing rumination and depression for populations with high levels of depressive symptoms. Furthermore, the effects appear to be stable over time, with treatment differences remaining at the two-week follow-up. As the concrete condition led to significant improvements in rumination for individuals with high pre-intervention depression compared to the control but not improvements in depression, encouraging mixed perspectives could offer advantages over traditional concrete perspectives for depression outcomes. Still, in the present study, direct comparisons did not support differences between the mixed and concrete conditions. More research is needed with larger clinical samples to clarify whether mixed perspectives offer benefits over concrete perspectives for reducing distress. In contrast to the theory that abstract processing about negative content is detrimental, the inclusion of abstract processing did not increase rumination.

Although these findings are preliminary, there is an implication that individuals' current level of depression may influence how well they respond to mixed and concrete interventions. For people without clinical levels of depression, encouraging a repeated focus on bothersome negative experiences from a concrete perspective might worsen long-term depression outcomes. This is also true of focusing on negative experiences from a mixed perspective in the short-term. However, the findings provide preliminary

evidence that, for people with active depression, treatments that encourage a mixed perspective can reduce rumination, and as a result, decrease depression.

APPENDICES

APPENDIX A.1

Demographic Page

1. What is your sex?

__ Male __ Female

2. What is your age?

___

3. What is your race?

___ Asian

___ Black

___ Latino/Hispanic

___ Native American

___ White

___ Middle Eastern

___ Bi or Multi-Racial

___ Other:

4. What is your classification?

___ Freshman

___ Sophomore

___ Junior

___ Senior

___ Graduate

APPENDIX A.2

Center for Epidemiologic Studies—Depression Scale

Circle the number of each statement that best describes how often you felt or behaved this way – DURING THE PAST WEEK.				
	Rarely or none of the time (less than 1 day)	**Some or a little of the time (1-2 days)**	**Occasionally or a moderate amount of the time (3-4 days)**	**Most or all of the time (5-7 days)**
During the past week:	0	1	2	3
1) I was bothered by things that usually don't bother me	0	1	2	3
2) I did not feel like eating; my appetite was poor	0	1	2	3
3) I felt that I could not shake off the blues even with help from my family and friends	0	1	2	3
4) I felt that I was just as good as other people	0	1	2	3
5) I had trouble keeping my mind on what I was doing	0	1	2	3

6) I felt depressed	0	1	2	3
7) I felt that everything I did was an effort	0	1	2	3
8) I felt hopeful about the future	0	1	2	3
9) I thought my life had been a failure	0	1	2	3
10) I felt fearful	0	1	2	3
11) My sleep was restless	0	1	2	3
12) I was happy	0	1	2	3
13) I talked less than usual	0	1	2	3
14) I felt lonely	0	1	2	3
15) People were unfriendly	0	1	2	3
16) I enjoyed life	0	1	2	3
17) I had crying spells	0	1	2	3
18) I felt sad	0	1	2	3
19) I felt that people disliked me	0	1	2	3
20) I could not get “going”	0	1	2	3

APPENDIX A.3

RRS

Please read each of the items below and indicate how often, **within the past 2 weeks**, you have thought or done each one. Please indicate what you generally have done, not what you think you should do.

Never	Sometimes	Often	Almost Always
1	2	3	4

1 Think about how alone you feel

2 Think "I won't be able to do my job if I don't snap out of this."

3 Think about your feelings of fatigue and achiness

4 Think about how hard it is to concentrate

5 Think "What am I doing to deserve this?"

6 Think about how passive and unmotivated you feel

7 Analyze recent events to try to understand why you are depressed

8 Think about how you don't seem to feel anything anymore

9 Think "Why can't I get going?"

10 Think "Why do I always react this way?"

11 Go away by yourself and think about why you feel this way

12 Write down what you are thinking and analyze it

13 Think about a recent situation, wishing it had gone better

14 Think "I won't be able to concentrate if I keep feeling this way."

15 Think “Why do I have problems other people don’t have?”

16 Think “Why can’t I handle things better?”

17 Think about how sad you feel

18 Think about all your shortcomings, failings, faults, mistakes

19 Think about how you don’t feel up to doing anything

20 Analyze your personality to try to understand why you are depressed

21 Go someplace alone to think about your feelings

22 Think about how angry you are with yourself

APPENDIX A.4

Valued-Living Questionnaire

Below are domains of life that are valued by some people. We are concerned with your subjective experience of your quality of life in each of these domains. One aspect of quality of life involves the importance one puts on the different domains of living. Rate the importance of each domain (by circling a number) on a scale of 1 to 10; 1 means that domain is not at all important, and 10 means that domain is very important. Not everyone will value all of these domains, or value all domains the same. Rate each domain according to *your own personal sense of importance*.

Domain	not at all important									extremely important
1. Family relations (other than marriage or parenting)	1	2	3	4	5	6	7	8	9	10
2. Marriage/couples/ intimate relations	1	2	3	4	5	6	7	8	9	10
3. Parenting	1	2	3	4	5	6	7	8	9	10
4. Friendships/social relations	1	2	3	4	5	6	7	8	9	10
5. Employment	1	2	3	4	5	6	7	8	9	10
6. Education/training	1	2	3	4	5	6	7	8	9	10
7. Recreation	1	2	3	4	5	6	7	8	9	10

8. Spirituality	1	2	3	4	5	6	7	8	9	10
9. Citizenship/ community life	1	2	3	4	5	6	7	8	9	10
10. Physical well-being	1	2	3	4	5	6	7	8	9	10

In this section, we would like you to give a rating of how *consistent* your actions are with each value. Everyone does better in some domains than others. We are NOT asking about your ideal in each domain. We want to know how you think you have been doing **during the past week**. Rate each item (by circling a number) on a scale of 1 to 10; 1 means that your actions have been fully inconsistent with your value, and 10 means that your actions have been fully consistent with your value.

Domain	consistent									consistent
1. Family relations (other than marriage or parenting)	1	2	3	4	5	6	7	8	9	10
2. Marriage/couples/ intimate relations	1	2	3	4	5	6	7	8	9	10
3. Parenting	1	2	3	4	5	6	7	8	9	10
4. Friendships/social relations	1	2	3	4	5	6	7	8	9	10
5. Employment	1	2	3	4	5	6	7	8	9	10
6. Education/training	1	2	3	4	5	6	7	8	9	10
7. Recreation	1	2	3	4	5	6	7	8	9	10

8. Spirituality	1	2	3	4	5	6	7	8	9	10
9. Citizenship/ community life	1	2	3	4	5	6	7	8	9	10
10. Physical well-being	1	2	3	4	5	6	7	8	9	10

APPENDIX A.5

Kentucky Inventory of Mindfulness Skills

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you when you think about bothersome events

1	2	3	4	5
Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true

Accept Without Judgment items

I tell myself that I shouldn't be feeling the way I'm feeling.

I believe some of my thoughts are abnormal or bad and I shouldn't think that way.

I make judgments about whether my thoughts are good or bad.

I tend to make judgments about how worthwhile or worthless my experiences are.

I tell myself that I shouldn't be thinking the way I'm thinking.

I think some of my emotions are bad or inappropriate and I shouldn't feel them.

I disapprove of myself when I have irrational ideas.

I criticize myself for having irrational or inappropriate emotions.

I tend to evaluate whether my perceptions are right or wrong.

APPENDIX A.6

The Meaning-Making Scale

Please rate the following statements on how strongly you agree or disagree with them.

Strongly disagree					Strongly agree
1	2	3	4	5	6

I actively take the time to reflect on events that happen in my life.

I have an understanding of what makes my life meaningful.

I prefer not to think about the meaning of events that I encounter (r).

When difficult things happen, I am usually quick to see the meaning of why they happen to me.

Self-reflection helps me to make my life meaningful.

I actively focus on activities and events that I personally find valuable.

I feel my life is meaningful.

APPENDIX A.7

Value Clarification Task

Below is a list of values and examples of what these values might mean to an individual. Please examine the values and check any that are important for you.

Connection with Others
e.g., It is important to you to have people in your life that you feel close and connected with.
Family
e.g., It is important to you to have strong bonds with family members and/or to have your own family.
Spirituality
e.g., It is important to you to have spirituality or religion in your life.
Independence
e.g., It is important to you to have independence of thought and activity; to have freedom to plan and not depend on others.
Contribute to Others
e.g., It is important for you to help other people
Honor Tradition
e.g., It is important to you to have commitment to cultural customs and ideas; to do things the way you learned from your family.
Security
e.g., It is important to you to live in secure surroundings; to have a secure income and know how your needs will be met.
Power
e.g., It is important to you to be in charge and have authority, respect, or resources.
Achievement
e.g., It is important to you to be successful; to be productive; to be ambitious.
Seek Pleasure in Life
e.g., It is important to you to have a good time; to seek every chance you can to have fun; to do things that give you pleasure; to really enjoy life.
Stimulation
e.g., It is important to you to have excitement, challenge, and novelty; to do lots of different things in life; to look for adventures and take risks.
Universalism
e.g., It is important to you that every person in the world is treated equally
Conformity
e.g., It is important to you to follow rules and to fit in.

Adapted from the values listed in “Bringing values back in: The adequacy of the European social survey to measure values in 20 countries” (Davidov, Schmidt, & Schwartz, 2008) and “Skills Training Manual for Dialectical Behavior Therapy” (Linehan, 2010).

APPENDIX A.8

AMT Word Lists

List A	**List B**	**List C**
Guilty	Grief	Sad
Happy	Devoted	Joy
Relieved	Hopeful	Smile
Hopeless	Rejected	Misery
Failure	Helpless	Ashamed
Proud	Amazed	Faithful
Grave	Blame	Weakness
Eager	Pleased	Lively
Glorious	Calm	Cheer
Ugly	Awful	Solemn
Worse	Mistake	Tired
Sunny	Bright	Lucky

APPENDIX B.1

Conditional Treatment Effects for Depression Outcomes

Conditional Effects of the Mixed-Control Contrast on Time 2 CES-D Score of the Moderation by Time 1 CES-D Score

Time 1 CES-D	Effect	*SE*	*t*	*p*
2.00	7.66	2.22	3.45	.00
4.30	6.72	1.99	3.38	.00
6.60	5.79	1.78	3.26	.00
8.90	4.86	1.58	3.08	.00
11.20	3.93	1.40	2.81	.01
13.50	2.99	1.25	2.39	.02
15.18	2.31	1.17	1.98	.05
15.80	2.06	1.15	1.80	.07
18.10	1.13	1.10	1.03	.31
20.40	0.20	1.11	0.18	.86
22.70	-0.74	1.19	-0.62	.54
25.00	-1.67	1.31	-1.27	.20
27.30	-2.60	1.47	-1.77	.08
28.53	-3.10	1.57	-1.98	.05
29.60	-3.53	1.66	-2.13	.03
31.90	-4.47	1.87	-2.39	.02
34.20	-5.40	2.09	-2.59	.01
36.50	-6.33	2.31	-2.74	.01
38.80	-7.26	2.55	-2.85	.01
41.10	-8.20	2.79	-2.94	.00
43.40	-9.13	3.04	-3.01	.00
45.70	-10.06	3.28	-3.06	.00
48.00	-10.99	3.53	-3.11	.00

Conditional Effects of the Concrete-Control Contrast on Time 2 CES-D Score of the Moderation by Time 1 CES-D Score

Time 1 CES-D	Effect	*SE*	*t*	*p*
1.00	5.77	2.18	2.65	.01

3.30	5.20	1.96	2.65	.01
5.60	4.64	1.76	2.64	.01
7.90	4.07	1.56	2.60	.01
10.20	3.50	1.39	2.52	.01
12.50	2.94	1.25	2.36	.02
14.80	2.37	1.14	2.08	.04
15.45	2.21	1.12	1.97	.05
17.10	1.81	1.09	1.66	.10
19.40	1.24	1.09	1.14	.26
21.70	0.67	1.15	0.59	.56
24.00	0.11	1.26	0.09	.93
26.30	-0.46	1.41	-0.32	.75
28.60	-1.02	1.59	-0.65	.52
30.90	-1.59	1.78	-0.89	.37
33.20	-2.16	1.99	-1.08	.28
35.50	-2.72	2.21	-1.23	.22
37.80	-3.29	2.43	-1.35	.18
40.10	-3.85	2.66	-1.45	.15
42.40	-4.42	2.90	-1.53	.13
44.70	-4.98	3.13	-1.59	.11
47.00	-5.55	3.37	-1.64	.10

Conditional Effects of the Mixed-Control Contrast on Time 3 CES-D Score of the Moderation by Time 1 CES-D Score

Time 1 CES-D	Effect	*SE*	*t*	*p*
2.00	4.71	2.34	2.01	.05
2.64	4.49	2.27	1.98	.05
4.30	3.92	2.10	1.87	.06
6.60	3.13	1.87	1.67	.10
8.90	2.34	1.66	1.41	.16
11.20	1.56	1.48	1.05	.29
13.50	0.77	1.32	0.58	.56
15.80	-0.02	1.21	-0.02	.99
18.10	-0.81	1.16	-0.69	.49
20.40	-1.60	1.18	-1.35	.18
22.70	-2.38	1.26	-1.89	.06

23.11	-2.52	1.28	-1.98	.05
25.00	-3.17	1.39	-2.28	.02
27.30	-3.96	1.56	-2.54	.01
29.60	-4.75	1.76	-2.70	.01
31.90	-5.53	1.98	-2.79	.01
34.20	-6.32	2.21	-2.86	.00
36.50	-7.11	2.46	-2.90	.00
38.80	-7.90	2.71	-2.92	.00
41.10	-8.69	2.96	-2.93	.00
43.40	-9.47	3.22	-2.94	.00
45.70	-10.26	3.48	-2.95	.00

Conditional Effects of the Concrete-Control Contrast on Time 3 CES-D Score Moderated by Time 1 CES-D Score

Time 1 CES-D	Effect	*SE*	*t*	*p*
1.00	6.28	2.44	2.57	.01
3.30	5.58	2.20	2.54	.01
5.60	4.88	1.97	2.48	.01
7.90	4.18	1.76	2.38	.02
10.20	3.49	1.56	2.23	.03
12.50	2.79	1.40	1.99	.05
12.59	2.76	1.40	1.97	.05
14.80	2.09	1.29	1.62	.11
17.10	1.39	1.22	1.13	.26
19.40	0.69	1.23	0.56	.58
21.70	-0.01	1.29	-0.01	.99
24.00	-0.71	1.41	-0.50	.61
26.30	-1.41	1.58	-0.90	.37
28.60	-2.11	1.77	-1.19	.23
30.90	-2.81	1.98	-1.42	.16
33.20	-3.51	2.22	-1.59	.11
35.50	-4.21	2.46	-1.71	.09
37.80	-4.91	2.71	-1.81	.07
40.10	-5.61	2.96	-1.89	.06
42.40	-6.31	3.22	-1.96	.05
43.07	-6.51	3.30	-1.97	.05
44.70	-7.01	3.49	-2.01	.05

47.00	-7.71	3.75	-2.05	.04

APPENDIX B.2

Conditional Treatment Effects for Rumination Outcomes

Conditional Effects of the Mixed-Control Contrast on Time 2 RRS Score Moderated by Time 1 CES-D Score

Time 1 CES-D	Effect	*SE*	*t*	*p*
2.00	3.47	2.51	1.38	.17
4.30	2.74	2.25	1.21	.23
6.60	2.00	2.01	1.00	.32
8.90	1.27	1.78	0.71	.48
11.20	0.53	1.58	0.34	.74
13.50	-0.20	1.42	-0.14	.89
15.80	-0.93	1.30	-0.72	.47
18.10	-1.67	1.24	-1.34	.18
20.40	-2.40	1.26	-1.91	.06
20.71	-2.50	1.27	-1.98	.05
22.70	-3.13	1.34	-2.34	.02
25.00	-3.87	1.48	-2.61	.01
27.30	-4.60	1.67	-2.76	.01
29.60	-5.34	1.88	-2.84	.01
31.90	-6.07	2.11	-2.87	.00
34.20	-6.80	2.36	-2.88	.00
36.50	-7.54	2.62	-2.87	.00
38.80	-8.27	2.89	-2.86	.00
41.10	-9.01	3.16	-2.85	.01
43.40	-9.74	3.44	-2.83	.01
45.70	-10.47	3.72	-2.81	.01
48.00	-11.21	4.00	-2.80	.01

Conditional Effects of the Concrete-Control Contrast on Time 2 RRS Score Moderated by Time 1 CES-D Score

Time 1 CES-D	Effect	*SE*	*t*	*p*
1.00	4.89	2.53	1.93	.06
3.30	4.12	2.28	1.81	.07

5.60	3.36	2.04	1.65	.10
7.90	2.60	1.81	1.43	.15
10.20	1.84	1.61	1.14	.26
12.50	1.07	1.44	0.74	.46
14.80	0.31	1.32	0.23	.81
17.10	-0.45	1.26	-0.36	.72
19.40	-1.22	1.26	-0.96	.34
21.70	-1.98	1.34	-1.48	.14
24.00	-2.74	1.47	-1.87	.06
24.79	-3.00	1.52	-1.97	.05
26.30	-3.50	1.64	-2.14	.03
28.60	-4.27	1.85	-2.31	.02
30.90	-5.03	2.07	-2.42	.02
33.20	-5.79	2.32	-2.50	.01
35.50	-6.56	2.57	-2.55	.01
37.80	-7.32	2.84	-2.58	.01
40.10	-8.08	3.11	-2.60	.01
42.40	-8.84	3.38	-2.62	.01
44.70	-9.61	3.66	-2.63	.01
47.00	-10.37	3.94	-2.63	.01

Conditional Effects of the Mixed-Control Contrast on Time 3 RRS Score Moderated by Time 1 CES-D Score

Time 1 CES-D	Effect	*SE*	*t*	*p*
2.00	2.72	2.57	1.06	.29
4.30	1.97	2.31	0.85	.40
6.60	1.21	2.06	0.59	.56
8.90	0.46	1.83	0.25	.80
11.20	-0.29	1.62	-0.18	.86
13.50	-1.05	1.45	-0.72	.47
15.80	-1.80	1.33	-1.35	.18
18.01	-2.52	1.28	-1.98	.05
18.10	-2.55	1.28	-2.00	.05
20.40	-3.31	1.29	-2.56	.01
22.70	-4.06	1.38	-2.94	.00
25.00	-4.81	1.52	-3.16	.00
27.30	-5.57	1.71	-3.25	.00
29.60	-6.32	1.93	-3.27	.00

31.90	-7.07	2.17	-3.26	.00
34.20	-7.82	2.43	-3.22	.00
36.50	-8.58	2.69	-3.18	.00
38.80	-9.33	2.97	-3.14	.00
41.10	-10.08	3.25	-3.10	.00
43.40	-10.84	3.53	-3.07	.00
45.70	-11.59	3.82	-3.03	.00
48.00	-12.34	4.11	-3.00	.00

Conditional Effects of the Concrete-Control Contrast on Time 3 RRS Score Moderated by Time 1 CES-D Score

Time 1 CES-D	Effect	*SE*	*t*	*p*
1.00	3.94	2.56	1.54	.13
3.30	3.29	2.31	1.43	.16
5.60	2.65	2.07	1.28	.20
7.90	2.00	1.84	1.08	.28
10.20	1.35	1.64	0.82	.41
12.50	0.70	1.47	0.48	.63
14.80	0.06	1.35	0.04	.97
17.10	-0.59	1.28	-0.46	.64
19.40	-1.24	1.28	-0.97	.34
21.70	-1.89	1.35	-1.40	.16
24.00	-2.54	1.48	-1.71	.09
26.30	-3.18	1.65	-1.93	.06
26.97	-3.37	1.71	-1.97	.05
28.60	-3.83	1.86	-2.06	.04
30.90	-4.48	2.08	-2.15	.03
33.20	-5.13	2.33	-2.20	.03
35.50	-5.77	2.58	-2.24	.03
37.80	-6.42	2.84	-2.26	.03
40.10	-7.07	3.11	-2.27	.02
42.40	-7.72	3.39	-2.28	.02
44.70	-8.37	3.66	-2.28	.02
47.00	-9.01	3.95	-2.28	.02

APPENDIX B.3

The Moderation Mediation Analysis for Treatment Differences in the Mixed-Control Contrast on the RRS Mediated by MMS, VLQ and KIMS

Conditional Direct Effects of Mixed-Control Contrast on Time 2 RRS through Time 2 KIMS.

Percentile	T1 CES-D	Effect	*SE*	*t*	*p*
10	8.00	1.61	1.84	0.88	.38
25	11.00	0.68	1.57	0.43	.67
50	17.00	-1.20	1.24	-0.97	.33
75	24.00	-3.39	1.39	-2.44	.02
90	32.00	-5.89	2.09	-2.82	.01

Conditional Indirect Effects of Mixed-Control Contrast on Time 2 RRS through Time 2 KIMS.

Percentile	T1 CES-D	Effect	Boot *SE*	BootLLCI	BootULCI
10	8.00	-0.06	0.43	-1.05	0.70
25	11.00	-0.08	0.37	-0.98	0.56
50	17.00	-0.12	0.30	-0.84	0.41
75	24.00	-0.16	0.34	-1.04	0.41
90	32.00	-0.21	0.51	-1.53	0.59

Conditional Direct Effects of Mixed-Control Contrast on Time 2 RRS through Time 2 MMS.

Percentile	T1 CES-D	Effect	*SE*	*t*	*p*
10	8.00	1.48	1.88	0.79	.43
25	11.00	0.53	1.61	0.33	.74
50	17.00	-1.36	1.27	-1.07	.28
75	24.00	-3.58	1.42	-2.52	.01
90	32.00	-6.11	2.13	-2.87	< .001

Conditional Indirect Effects of Mixed-Control Contrast on Time 2 RRS through Time 2 MMS.

Percentile	T1 CES-D	Effect	Boot *SE*	BootLLCI	BootULCI
10	8.00	0.07	0.26	-0.20	1.09
25	11.00	0.06	0.23	-0.18	0.91
50	17.00	0.05	0.17	-0.15	0.65
75	24.00	0.03	0.15	-0.15	0.56
90	32.00	0.01	0.19	-0.30	0.50

Conditional Direct Effects of Mixed-Control Contrast on Time 2 RRS through Time 2 VLQ

Percentile	T1 CES-D	Effect	*SE*	*t*	*p*
10	8.00	1.24	1.89	0.66	.51
25	11.00	0.29	1.62	0.18	.86
50	17.00	-1.60	1.28	-1.25	.21
75	24.00	-3.82	1.43	-2.66	.01
90	32.00	-6.34	2.13	-2.98	< .001

Conditional Indirect Effects of Mixed-Control Contrast on Time 2 RRS through Time 2 VLQ

Percentile	T1 CES-D	Effect	Boot *SE*	BootLLCI	BootULCI
10	8.00	0.32	0.36	-0.10	1.59
25	11.00	0.31	0.33	-0.11	1.41
50	17.00	0.29	0.30	-0.12	1.19
75	24.00	0.27	0.30	-0.11	1.16
90	32.00	0.24	0.35	-0.10	1.52

Conditional Direct Effects of Mixed-Control Contrast on Time 3 RRS through Time 3 KIMS

Percentile	T1 CES-D	Effect	*SE*	*t*	*p*
10	8.00	1.13	1.85	0.61	.54
25	11.00	0.10	1.58	0.06	.95

50	17.00	-1.97	1.25	-1.58	.12
75	24.00	-4.38	1.40	-3.13	< .001
90	32.00	-7.14	2.10	-3.40	< .001

Conditional Indirect Effects of Mixed-Control Contrast on Time 3 RRS through Time 3 KIMS

Percentile	T1 CES-D	Effect	Boot *SE*	BootLLCI	BootULCI
10	8.00	-0.11	0.52	-1.35	0.76
25	11.00	-0.09	0.45	-1.24	0.64
50	17.00	-0.06	0.36	-0.95	0.58
75	24.00	-0.03	0.37	-0.79	0.77
90	32.00	0.01	0.53	-0.92	1.28

Conditional Direct Effects of Mixed-Control Contrast on Time 3 RRS through Time 3 MMS

Percentile	T1 CES-D	Effect	*SE*	*t*	*p*
10	8.00	0.96	1.92	0.50	.62
25	11.00	-0.03	1.64	-0.02	.98
50	17.00	-2.02	1.29	-1.56	.12
75	24.00	-4.33	1.46	-2.98	< .001
90	32.00	-6.97	2.19	-3.19	< .001

Conditional Indirect Effects of Mixed-Control Contrast on Time 3 RRS through Time 3 MMS

Percentile	T1 CES-D	Effect	Boot *SE*	BootLLCI	BootULCI
10	8.00	0.07	0.22	-0.14	0.87
25	11.00	0.04	0.18	-0.15	0.66
50	17.00	-0.02	0.13	-0.51	0.14
75	24.00	-0.08	0.18	-0.81	0.09
90	32.00	-0.16	0.30	-1.41	0.15

Conditional Direct Effects of Mixed-Control Contrast on Time 3 RRS through Time 3 VLQ

Percentile	T1 CES-D	Effect	*SE*	*t*	*p*
10	8.00	1.02	1.95	0.53	.60
25	11.00	0.00	1.67	0.00	1.00
50	17.00	-2.04	1.32	-1.54	.13
75	24.00	-4.42	1.47	-3.00	< .001
90	32.00	-7.13	2.19	-3.26	< .001

Conditional Indirect Effects of Mixed-Control Contrast on Time 3 RRS through Time 3 VLQ

Percentile	T1 CES-D	Effect	Boot *SE*	BootLLCI	BootULCI
10	8.00	0.00	0.37	-0.72	0.84
25	11.00	0.00	0.34	-0.66	0.77
50	17.00	0.00	0.29	-0.53	0.64
75	24.00	0.00	0.25	-0.49	0.57
90	32.00	0.00	0.26	-0.51	0.57

Note. For the tables above, *T1* CES-D = Score on the Time 1 administration of the Center for Epidemiological Studies- Depression Scale, Boot *SE* = the standard error that resulted from the bootstrap analysis, BootLLCI = the bootstrapped lower limit of the 95% confidence interval for the indirect effect at the conditional point listed, BootULCI = the bootstrapped upper limit of the 95% confidence interval for the indirect effect at the conditional point listed.

APPENDIX B.4

The Moderation Mediation Analysis for Treatment Differences in the Mixed-Control Contrast on CES-D Time 2 mediated by Time 2 RRS

Step 1: Time 2 Rumination Regressed on Relevant Predictors

	B	*SE*	*t*	Sig.
Constant	21.59	3.99	5.42	< .001
Mixed-Control Contrast	-1.86	1.24	-1.50	.14
Time 1 CES-D	0.51	0.10	4.94	< .001
Interaction	-0.32	0.13	-2.45	.02
Time 1 RRS	0.49	0.09	5.63	< .001

Note. R^2 was .62 for the overall regression, $p < .001$. CES-D = Center for Epidemiological Studies-Depression Scale, RRS = Ruminative Response Scale, Interaction = Mixed-Control Contrast x Time 1 CES-D.

Step 2: Time 2 CES-D Score Regressed on Relevant Predictors

	B	*SE*	*t*	Sig.
Constant	3.83	2.89	1.33	.19
Time 2 RRS	0.59	0.05	11.02	< .001
Mixed-Control Contrast	1.99	0.83	2.39	.02
Time 1 CES-D	0.43	0.07	5.84	< .001
Interaction	-0.22	0.09	-2.44	.02
Time 1 RRS	-0.27	0.06	-4.24	< .001

Note. R^2 was .74 for the overall regression, $p < .001$. CES-D = Center for Epidemiological Studies-Depression Scale, RRS = Ruminative Response Scale, Interaction = Mixed-Control Contrast x Time 1 CES-D.

APPENDIX B.5

The Moderation Mediation Analysis for Treatment Differences in the Concrete-Control Contrast on CES-D Time 2 mediated by Time 2 RRS

Step 1: Time 2 Rumination Regressed on Relevant Predictors

	B	*SE*	*t*	Sig.
Constant	17.70	3.77	4.69	< .001
Concrete -Control Contrast	-0.79	1.25	-0.63	.53
Time 1 CES-D	0.41	0.10	4.22	< .001
Interaction	-0.33	0.13	-2.57	.01
Time 1 RRS	0.58	0.08	6.94	< .001

Note. R^2 was .61 for the overall regression, $p < .001$. CES-D = Center for Epidemiological Studies-Depression Scale, RRS = Ruminative Response Scale, Interaction = Concrete-Control Contrast x Time 1 CES-D.

Step 2: Time 2 CES-D Score Regressed on Relevant Predictors

	B	*SE*	*t*	Sig.
Constant	7.79	2.57	3.03	< .001
Time 2 RRS	0.59	0.05	11.69	< .001
Concrete-Control Contrast	2.01	0.80	2.51	.01
Time 1 CES-D	0.60	0.07	9.11	< .001
Interaction	-0.06	0.08	-0.66	.51
Time 1 RRS	-0.36	0.06	-5.91	< .001

Note. R^2 was .77 for the overall regression, $p < .001$. CES-D = Center for Epidemiological Studies-Depression Scale, RRS = Ruminative Response Scale, Interaction = Concrete-Control Contrast x Time 1 CES-D.

APPENDIX B.6

The Moderation Mediation Analysis for Treatment Differences in the Mixed-Control Contrast on CES-D Time 3 mediated by Time 3 RRS

Step 1: Time 3 Rumination Regressed on Relevant Predictors

	B	*SE*	*t*	Sig.
Constant	21.58	3.77	5.73	< .001
Mixed-Control Contrast	-0.91	1.27	-0.72	.48
Time 1 CES-D	0.48	0.10	4.87	< .001
Interaction	-0.28	0.13	-2.17	.03
Time 1 RRS	0.46	0.08	5.50	< .001

Note. R^2 was .57 for the overall regression, $p < .001$. CES-D = Center for Epidemiological Studies-Depression Scale, RRS = Ruminative Response Scale, Interaction = Mixed-Control Contrast x Time 1 CES-D.

Step 2: Time 3 CES-D Score Regressed on Relevant Predictors

	B	*SE*	*t*	Sig.
Constant	-0.39	2.84	-0.14	.89
Time 3 RRS	0.66	0.05	12.56	< .001
Mixed-Control Contrast	1.64	0.88	1.87	.06
Time 1 CES-D	0.35	0.07	4.90	< .001
Interaction	-0.11	0.09	-1.18	.24
Time 1 RRS	-0.23	0.06	-3.68	< .001

Note. R^2 was .74 for the overall regression, $p < .001$. CES-D = Center for Epidemiological Studies-Depression Scale, RRS = Ruminative Response Scale, Interaction = Mixed-Control Contrast x Time 1 CES-D.

APPENDIX B.7

The Moderation Mediation Analysis for Treatment Differences in the Concrete-Control Contrast on CES-D Time 3 mediated by Time 3 RRS

Step 1: Time 3 Rumination Regressed on Relevant Predictors

	B	*SE*	*t*	Sig.
Constant	23.00	4.05	5.67	< .001
Concrete -Control Contrast	-2.72	1.27	-2.14	.03
Time 1 CES-D	0.51	0.11	4.82	< .001
Interaction	-0.33	0.13	-2.45	.02
Time 1 RRS	0.42	0.09	4.68	< .001

Note. R^2 was .56 for the overall regression, $p < .001$. CES-D = Center for Epidemiological Studies-Depression Scale, RRS = Ruminative Response Scale, Interaction = Concrete-Control Contrast x Time 1 CES-D.

Step 2: Time 3 CES-D Score Regressed on Relevant Predictors

	B	*SE*	*t*	Sig.
Constant	-3.51	2.90	-1.21	.23
Time 3 RRS	0.63	0.05	12.11	< .001
Concrete -Control Contrast	0.70	0.84	0.83	.41
Time 1 CES-D	0.29	0.07	3.98	< .001
Interaction	-0.13	0.09	-1.43	.16
Time 1 RRS	-0.14	0.06	-2.25	.03

Note. R^2 was .72 for the overall regression, $p < .001$. CES-D = Center for Epidemiological Studies-Depression Scale, RRS = Ruminative Response Scale, Interaction = Concrete-Control Contrast x Time 1 CES-D.

REFERENCES

Abbott, M. J., & Rapee, R. M. (2004). Post-event rumination and negative self-appraisal in social phobia before and after treatment. *Journal of Abnormal Psychology*, *113*(1), 136-144.

Abela, J. R. Z., Brozina, K., & Haigh, E. P. (2002). An examination of the response styles theory of depression in third- and seventh-grade children: A short-term longitudinal study. *Journal of Abnormal Child Psychology*, *30*(5), 515-527.

Abela, J. R. Z., Vanderbilt, E., & Rochon, A. (2004). A test of the integration of the response styles and social support theories of depression in third and seventh grade children. *Journal of Social & Clinical Psychology*, *23*(5), 653-674.

Anslie, R. (2007). Psychoanalytic Psychotherapy. In Rochlen, A. (Eds.), *Applying counseling theories: An online, case-based approach* (pp. 6-17). Upper Saddle River, NJ: Pearson.

Ayduk, Ö., & Kross, E. (2010). Analyzing negative experiences without ruminating: The role of self-distancing in enabling adaptive self-reflection. *Social and Personality Psychology Compass*, *4*(10), 841-854.

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment*, *11*(3), 191-206.

Baikie, K. A., Geerligs, L., & Wilhelm, K. (2012). Expressive writing and positive writing for participants with mood disorders: An online randomized controlled trial. *Journal of Affective Disorders*, *136*(3), 310-319.

Baldwin, G. & Shean, G. (2008), Sensitivity and specificity of depression questionnaires in a college age sample. Journal of Genetic Psychology, 16, 281-288.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistic considerations. Journal of Personality and Social Psychology, 51, 1173−1182.

Beck, A. T (2002). Cognitive models of depression. In (R. L. Leahy & E. T. Dowd, Eds.) *Clinical advances in psychotherapy: Theory and application* (pp.26-61). New York: Springer.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *The Beck Depression Inventory-Second Edition.* San Antonio, TX: The Psychological Corporation.

Borkovec, T.D., Robinson, E., Pruzinsky, T., & DePree, J.A. (1983). Preliminary exploration of worry: Some characteristics and processes. Behaviour Research & Therapy, 21, 9–16.

Brewin, C. R., Reynolds, M., & Tata, P. (1999). Autobiographical memory processes and the course of depression. *Journal of Abnormal Psychology*, *108,* 511–517.

Brinker, J. K., & Dozois, D. J. (2009). Ruminative thought style and depressed mood. *Journal of Clinical Psychology*, *65*(1), 1-19.

Brittlebank, A. D., Scott, J., Williams, J. M., & Ferrier, I. N. (1993). Autobiographical memory in depression: State or trait marker? *British Journal of Psychiatry, 162*, 118-121.

Brothers, S. C., & Maddux, J. E. (2003). The goal of biological parenthood and emotional distress from infertility: Linking parenthood to happiness. *Journal of Applied Social Psychology*, *33*(2), 248-262.

Butler, L. D., & Nolen-Hoeksema, S. (1994). Gender differences in responses to depressed mood in a college sample. *Sex Roles*, *30*(5), 331-346.

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior.* New York: Springer- Verlag.

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, *97*(1), 19-35.

Carver, C. S., & Scheier, M. F. (1998). *On the self-regulation of behavior.* Cambridge, United Kingdom: Cambridge University Press.

CDC. Current Depression Among Adults --- United States, 2006 and 2008. MMWR 2010; 59(38); 1229-1235.

Ciarrochi, J., Scott, G., Deane, F. P., & Heaven, P. C. L. (2003). Relations between social and emotional competence and mental health: A construct validation study. *Personality and Individual Differences*, 35, 1947-1963.

Conway, M., Csank, P. A. R., Holm, S. L., & Blake, C. K. (2000). On individual differences in rumination on sadness. *Journal of Personality Assessment*, *75*(3), 404-425.

Dalgleish, T., Spinks, H., Yiend, J., & Kuyken, W. (2001). Autobiographical memory style in seasonal affective disorder and its relationship to future symptom remission. *Journal of Abnormal Psychology, 110,* 335–340.

Davidov, E., Schmidt, P., & Schwartz, S. H. (2008). Bringing values back in: The adequacy of the European social survey to measure values in 20 countries. *Public Opinion Quarterly*, *72*(3), 420-445.

Donaldson, C., & Lam, D. (2004). Rumination, mood and social problem-solving in major depression. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences*, *34*(7), 1309-1318.

Frankl, V. E. (1992) *Man's search for meaning: An introduction to logotheaapy*. NY: Washington Square Press.

Fresco, D. M., Frankel, A. N., Mennin, D. S., Turk, C. L., & Heimberg, R. G. (2002). Distinct and overlapping features of rumination and worry: The relationship of cognitive production to negative affective states. *Cognitive Therapy and Research*, 26, 179–188.

Gilliam, C. M. (2006). *The effects of rumination on problem-solving self-efficacy and self-efficacy for controlling upsetting thoughts in the context of depressive symptoms.* US: ProQuest Information & Learning.

Gortner, E., Rude, S. S., & Pennebaker, J. W. (2006). Benefits of expressive writing in lowering rumination and depressive symptoms. *Behavior Therapy*, 37(3), 292-303.

Grant, K. E., Lyons, A. L., Finkelstein, J. S., Conway, K. M., Reynolds, L. K., O'Koon, J. H., et al. (2004). Gender differences in rates of depressive symptoms among low-income, urban, African American youth: A test of two mediational hypotheses. *Journal of Youth and Adolescence*, *33*(6), 523-533.

Greenberg, M. A. (1995). Cognitive processing of traumas: The role of intrusive thoughts and reappraisals. *Journal of Applied Social Psychology*, *25*(14), 1262-1296.

Hamilton, B. L. (1977). An empirical investigation of the effects of heterogeneous regression slopes in analysis of covariance. *Educational And Psychological Measurement*, *37*(3), 701-712.

Harrington, J. A., & Blankenship, V. (2002). Ruminative thoughts and their relation to depression and anxiety. *Journal of Applied Social Psychology*, *32*(3), 465-485.

Hayes, A. F. (2012). An analytical primer and computational tool for observed variable moderation, mediation, and conditional process modeling. *Manuscript submitted for publication.* Retrieved from http://www.afhayes.com/spss-sas-and-mplus-macros-and-code.html

Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods*, *41*, 924-936.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, *44*(1), 1-25.

Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: A contextual approach to cognition and emotion in psychotherapy*. NY: Guilford.

Hermans, D., Vandromme, H., Debeer, E., Raes, F., Demyttenaere, K., Brunfaut, E., & Williams, J. M. G. (2008). Overgeneral autobiographical memory predicts

diagnostic status in depression. *Behaviour Research and Therapy*, *46*(5), 668-677.

Hong, R. Y. (2007). Worry and rumination: Differential associations with anxious and depressive symptoms and coping behavior. *Behaviour Research and Therapy*, *45*(2), 277-290.

Horowitz, M. J. (1985). Disasters and psychological responses to stress. *Psychiatric Annals, 15,* 161–167.

Howk, C., & Bennett, M. (2010). Immune function and health outcomes in women with depression. *BioPsychoSocial Medicine*, *4*(1), 3.

Hunt, M. (1998). The only way out is through: Emotional processing and recovery after a depressing life event. *Behaviour Research and Therapy*, *36*(4), 361-384.

Ito, T., Takenaka, K., & Agari, I. (2005). Psychological vulnerability to depression: Negative rumination, perfectionism, immodithymic personality, dysfunctional attitudes, and depressive states. *Japanese Journal of Educational Psychology*, *53*(2), 162-171.

Ito, T., Takenaka, K., Tomita, T., & Agari, I. (2006). Comparison of ruminative responses with negative rumination as a vulnerability factor for depression. *Psychological Reports*, *99*(3), 763-772.

Iqbal, Z., Birchwood, M., Hemsley, D., Jackson, C., & Morris, E. (2004).Autobiographical memory and post-psychotic depression in first episode psychosis. *British Journal of Clinical Psychology, 43,* 97–104.

James, I. A., Reichelt, F. K., Carlsonn, P., & McAnaney, A. (2008). Cognitive behavior therapy and executive functioning in depression. *Journal of Cognitive*

Psychotherapy, *22*(3), 210-218.

Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma.* New York: Free Press.

Johnson, P. O., & Fay, L. C. (1950). The Johnson–Neyman technique, its theory and application. *Psychometrika*, 15, 349-367.

Johnson, P. O., & Neyman, J. (1936). Tests of certain linear hypotheses and their application to some educational problems. *Statistical ResearchMemoirs*, 1, 57-93.

Jones, A. C., & Pennebaker, J. W. (2006). Expressive Writing, Psychological Processes, and Personality. In M. E. Vollrath, M. E. Vollrath (Eds.) , *Handbook of personality and health* (pp. 277-298). New York, NY US: John Wiley & Sons Ltd.

Kaney, S., Bowen-Jones, K., & Bentall, R. P. (1999). Persecutory delusions and autobiographical memory. *British Journal of Clinical Psychology, 38,* 97–102.

Klinkman M.S., Coyne J.C., Gallo S., & Schwenk T. L. (1997) Can case-finding instruments be used to improve physician detection of depression in primary care? *Archives of Family Medicine*, 6, 567.

Koole, S. L., Smeets, K., van Knippenberg, A., & Dijksterhuis, A. (1999). The cessation of rumination through self-affirmation. *Journal of Personality and Social Psychology*, *77*(1), 111-125.

Kross, E., & Ayduk, O. (2008). Facilitating adaptive emotional analysis: Distinguishing distanced-analysis of depressive experiences from immersed-analysis and distraction. *Personality and Social Psychology Bulletin*, *34*(7), 924-938.

Kross, E., & Ayduk, O. (2011). Making meaning out of negative experiences by self-distancing. *Current Directions in Psychological Science,* 20, 187.

Kross, E., Ayduk, O., & Mischel, W. (2005). When asking 'why' does not hurt: Distinguishing rumination from reflective processing of negative emotions. *Psychological Science*, *16*(9), 709-715.

Kuehner, C. C., Huffziger, S. S., & Liebsch, K. K. (2009). Rumination, distraction and mindful self-focus: Effects on mood, dysfunctional attitudes and cortisol stress response. *Psychological Medicine: A Journal Of Research In Psychiatry And The Allied Sciences*,*39*(2), 219-228.

Kuehner, C., & Weber, I. (1999). Responses to depression in unipolar depressed patients: An investigation of Nolen-Hoeksema's response styles theory. *Psychological Medicine*, *29*(6), 1323-1333.

Kuyken, W., Watkins, E., Holden, E., & Cook, W. (2006). Rumination in adolescents at risk for depression. *Journal of Affective Disorders*, *96*(1), 39-47.

Lam, D., Smith, N., Checkley, S., Rijsdijk, F., & Sham, P. (2003). Effect of neuroticism, response style and information processing on depression severity in a clinically depressed sample. *Psychological Medicine*, *33*(3), 469-479.

Langens, T. A., & Schüler, J. (2005). Written emotional expression and emotional well-being: The moderating role of fear of rejection. *Personality And Social Psychology Bulletin*, *31*(6), 818-830.

Lavallee, L. F., & Campbell, J. D. (1995). Impact of personal goals on self-regulation processes elicited by daily negative events. *Journal of Personality and Social Psychology*, *69*(2), 341-352.

Lavender, A., & Watkins, E. (2004). Rumination and future thinking in depression. *British Journal of Clinical Psychology, 43,* 129–142.

Lepore, S. J. (1997). Expressive writing moderates the relation between intrusive thoughts and depressive symptoms. *Journal Of Personality And Social Psychology, 73*(5), 1030-1037.

Lewinsohn P. M., Seeley J. R., Roberts R. E., & Allen N. B. (1997). Center for Epidemiologic Studies Depression Scale (CES-D) as a screening instrument for depression among community-residing older adults. *Psychology of Aging*, 12, 277–287.

Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder.* New York: Guilford.

Linehan, M. M. (2010). *Skills Training Manual for Dialectical Behavior Therapy*. Handouts presented at the annual convention of the Association for Behavioral and Cognitive Therapies, San Francisco, CA.

Lo, C. L., Ho, S. Y., & Hollon, S. D. (2008). The effects of rumination and negative cognitive styles on depression: A mediation analysis. *Behaviour Research And Therapy, 46*(4), 487-495.

Lyubomirsky, S., & Nolen-Hoeksema, S. (1993). Self-perpetuating properties of dysphoric rumination. *Journal of Personality and Social Psychology*, 65, 339–349.

Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology*, 69, 176–190.

Lyubomirsky, S., Tucker, K. L., Caldwell, N. D., & Berg, K. (1999). Why ruminators are poor problem solvers: Clues from the phenomenology of dysphoric rumination. *Journal of Personality and Social Psychology, 77,* 1041–1060.

Martin, L. L., & Tesser, A. (1989). Toward a motivational and structural theory of ruminative thought. In J. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 306-326). New York: Guilford Press.

Martin, L. L., & Tesser. A. (1996). Some ruminative thoughts. In R. S. Wyer (Ed.), *Advances in social cognition* (Vol. 9, pp. 1-47). Hillsdale. NJ: Erlbaum.

Martin, L. L., & Tesser, A. (2006). Extending the Goal Progress Theory of Rumination: Goal reevaluation and growth. In *Judgments over time: The interplay of thoughts, feelings, and behaviors.* (pp. 145-162). New York, NY US: Oxford University Press.

Mascaro, N., & Rosen, D. H. (2008). Assessment of existential meaning and its longitudinal relations with depressive symptoms. *Journal of Social and Clinical Psychology*, *27*(6), 576-599.

McIntosh, W. D., Harlow, T. F., & Martin, L. L. (1995). Linkers and nonlinkers: Goal beliefs as a moderator of the effects of everyday hassles on rumination, depression, and physical complaints. *Journal of Applied Social Psychology*, *25*(14), 1231-1244.

McIntosh, W. D., & Martin, L. L. (1992). The cybernetics of happiness: The relation between goal attainment, rumination, and affect. In M. S. Clark (Ed.), *Review ofpersonality and social psychology* (Vol. 14, pp. 222-246). Newbury Park, CA: Sage.

McIntosh, W. D., Martin, L. L., & Jones, J. B. I. (2001). Goal orientations and the search for confirmatory affect. *Journal of Psychology: Interdisciplinary and Applied*, *135*(1), 5-16.

McLaughlin, K. A., & Nolen-Hoeksema, S. (2011). Rumination as a transdiagnostic factor in depression and anxiety. *Behaviour Research And Therapy*, *49*(3), 186-193.

Michael, S. T., & Snyder, C. R. (2005). Getting unstuck: The roles of hope, finding meaning, and rumination in adjustment to bereavement among college students. *Death Studies*, *29*(5), 435-458.

Millar, K. U., Tesser, A., & Millar, M. G. (1988). The effects of a threatening life event on behavior sequences and intrusive thought: A self-disruption explanation. *Cognitive Therapy and Research*, *12*(5), 441-457.

Miller, W. R., & Rollnick, S. (2002). *Motivational Interviewing: Preparing people for change* (2nd ed.). New York: Guilford.

Moberly, N. J., & Watkins, E. R. (2006). Processing mode influences the relationship between trait rumination and emotional vulnerability. *Behavior Therapy*, *37*(3), 281-291.

Moberly, N. J., & Watkins, E. R. (2008). Ruminative self-focus, negative life events, and negative affect. *Behaviour Research and Therapy*, *46*(9), 1034-1039.

Moberly, N. J., & Watkins, E. R. (2010). Negative affect and ruminative self-focus during everyday goal pursuit. *Cognition and Emotion*, *24*(4), 729-739.

Morrow, J., & Nolen-Hoeksema, S. (1990). Effects of responses to depression on the remediation of depressive affect. *Journal of Personality and Social Psychology, 58,* 519–527.

Moulds, M. L. (2009). Asking 'why' still increases intrusions: A response to Ayduk and Kross (2008). *Behaviour Research and Therapy*, *47*(1), 93-96.

Muris, P., Roelofs, J., Rassin, E., Franken, I., & Mayer, B. (2005). Mediating effects of rumination and worry on the links between neuroticism, anxiety, and depression. *Personality and Individual Differences, 39*, 1105–1111.

Murray, C. J., & Lopez, A. D. (1997). Alternative projections of mortality and disability by cause 1990–2020: Global burden of disease study. *Lancet*, *349*, 1498–1504.

Myers J. K. & Weissman M. M. (1980) Use of a self-report symptom scale to detect depression in a community sample. *American Journal of Psychiatry*, 137, 1081-1084.

Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology*, *100*(4), 569-582.

Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology*, *109*(3), 504-511.

Nolen-Hoeksema, S., & Davis, C. G. (1999). 'Thanks for sharing that': Ruminators and their social support networks. *Journal of Personality and Social Psychology*, *77*(4), 801-814.

Nolen-Hoeksema, S., & Harrell, Z.A. (2002). Rumination, depression, and alcohol use: Tests of gender differences. *Journal of Cognitive Psychotherapy*, 16, 391–403.

Nolen-Hoeksema, S., Larson, J., & Grayson, C. (1999). Explaining the gender difference in depressive symptoms. *Journal of Personality and Social Psychology*, *77*(5), 1061-1072.

Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta Earthquake. *Journal of Personality and Social Psychology*, 61, 115−121.

Nolen-Hoeksema, S., & Morrow, J. (1993). Effects of rumination and distraction on naturally-occurring depressed mood. *Cognition & Emotion,7,* 561–570.

Nolen-Hoeksema, S., Morrow, J., & Fredrickson, B. L. (1993). Response styles and the duration of episodes of depressed mood. *Journal of Abnormal Psychology, 102,* 20–28.

Nolen-Hoeksema, S., Mumme, D., Wolfson, A., & Guskin, K. (1995). Helplessness in children of depressed and nondepressed mothers. *Developmental Psychology, 31,* 377–387.

Nolen-Hoeksema, S., Parker, L. E., & Larson, J. (1994). Ruminative coping with depressed mood following loss. *Journal of Personality and Social Psychology*, *67*(1), 92-104.

Nolen-Hoeksema, S., Stice, E., Wade, E., & Bohon, C. (2007). Reciprocal relations between rumination and bulimic, substance abuse, and depressive symptoms in female adolescents. *Journal of Abnormal Psychology*, *116*(1), 198-207.

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science*, *3*(5), 400-424.

Peeters, F., Wessel, I., Merckelbach, H., & Boon-Vermeeren, M. (2002). Autobiographical memory specificity and the course of major depressive disorder. *Comprehensive Psychiatry, 43*, 344-350.

Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. Psychological Science, 8(3), 162-166.

Pollock, L. R., & Williams, J. M. G. (2001). Effective problem solving in suicide attempters depends on specific autobiographical recall. *Suicide and Life-Threatening Behavior*, *31*(4), 386-396.

Rachman, S., Grüter-Andrew, J., & Shafran, R. (2000). Post-event processing in social anxiety. *Behaviour Research and Therapy*, *38*(6), 611-617.

Radloff LS. 1977. The CES-D Scale: a self-report depression scale for research in the general population. Applied Psychological Measurement 1: 385–401.

Raes, F., Hermans, D., Williams, J. M. G., Beyers, W., Eelen, P., & Brunfaut, E. (2006). Reduced autobiographical memory specificity and rumination in predicting the course of depression. *Journal of Abnormal Psychology*, *115*(4), 699-704.

Raes, F., Watkins, E. R., Williams, J. M. G., & Hermans, D. (2008). Non-ruminative processing reduces overgeneral autobiographical memory retrieval in students. *Behaviour Research and Therapy*, *46*(6), 748-756.

Rector, N. A., & Roger, D. (1996). Cognitive style and well-being: A prospective examination. *Personality and Individual Differences*, *21*(5), 663-674.

Rekart, K. N., Mineka, S., & Zinbarg, R. E. (2006). Autobiographical memory in dysphoric and non-dysphoric college students using a computerised version of the AMT. *Cognition and Emotion*, Autobiographical memory specificity and psychopathology, *20*(3-4), 506-515.

Rimes, K. A., & Watkins, E. (2005). The effects of self-focused rumination on global negative self-judgements in depression. *Behaviour Research and Therapy*, *43*(12), 1673-1681.

Riso, L. P., du Toit, P. L., Blandino, J. A., Dacey, S., Pacoe, E. M., Ulmer, C. S., et al. (2003). Cognitive aspects of chronic depression. *Journal of Abnormal Psychology*, *112*(1), 72-80.

Rohan, K. J., Sigmon, S. T., & Dorhofer, D. M. (2003). Cognitive-behavioral factors in seasonal affective disorder. *Journal of Consulting and Clinical Psychology*, *71*(1), 22-30.

Rothermund, K. (2003). Automatic vigilance for task-related information: Perseverance after failure and inhibition after success. *Memory and Cognition*, 31, 343-352.

Rude, S., Maestas, K., & Neff, K. (2007). Paying attention to distress: What's wrong with rumination? *Cognition & Emotion*, *21*(4), 843-864.

Rude, S. S., Mazzetti, F. A., Pal, H., & Stauble, M. R. (2011). Social rejection: How best to think about it? *Cognitive Therapy and Research, 35*(3), 209-216.

Segerstrom, S. C., Stanton, A. L., Alden, L. E., & Shortridge, B. E. (2003). A multidimensional structure for repetitive thought: What's on your mind, and how, and how much?. *Journal Of Personality And Social Psychology*, *85*(5), 909-921.

Schmaling, K. B., Dimidjian, S., Katon, W., & Sullivan, M. (2002). Response styles among patients with minor depression and dysthymia in primary care. *Journal Of Abnormal Psychology, 111*(2), 350-356.

Smith, J. M., & Alloy, L. B. (2009). A roadmap to rumination: A review of the definition, assessment, and conceptualization of this multifaceted construct. *Clinical Psychology Review*, *29*(2), 116-128.

Soliday, E., Garofalo, J. P., & Rogers, D. (2004). Expressive writing intervention for adolescents' somatic symptoms and mood. *Journal Of Clinical Child And Adolescent Psychology*, *33*(4), 792-801.

Spasojević, J., & Alloy, L. B. (2001). Rumination as a common mechanism relating depressive risk factors to depression. *Emotion*, *1*(1), 25-37.

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal*

of Counseling Psychology, *53*(1), 80-93.

Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences (5th ed.)*. New York, NY US: Routledge/Taylor & Francis Group.

Stewart, W. F., Ricci, J. A., Chee, E., Hahn, S. R., & Morganstein, D. (2003). Cost of lost productive work time among US workers with depression. *JAMA: Journal of the American Medical Association*, *289*(23), 3135-3144.

Strine, T. W., Mokdad, A. H., Balluz, L. S., Gonzalez, O., Crider, R., Berry, J. T., & Kroenke, K. (2008). Depression and anxiety in the United States: Findings from the 2006 Behavioral Risk Factor Surveillance System. *Psychiatric Services*, *59*(12), 1383-1390.

Sumner, J. A., Griffith, J. W., & Mineka, S. (2010). Overgeneral autobiographical memory as a predictor of the course of depression: A meta-analysis. *Behaviour Research and Therapy*, *48*(7), 614-625.

Sumner, J. A., Griffith, J. W., Mineka, S., Rekart, K. N., Zinbarg, R. E., & Craske, M. G. (2011). Overgeneral autobiographical memory and chronic interpersonal stress as predictors of the course of depression in adolescents. *Cognition & Emotion*, *25*(1), 183-192.

Szasz, P. (2009). Thought suppression, depressive rumination and depression: A mediation analysis. *Journal Of Cognitive And Behavioral Psychotherapies*, 9(2), 199-209.

Tait, R., & Silver, R. (1989). Coming to terms with major negative life events. In J. S. Uleman, J. A. Bargh, J. S. Uleman, J. A. Bargh (Eds.) , *Unintended thought* (pp.

351-382). New York, NY US: Guilford Press.

Teasdale, J. D. (1999). Emotional processing, three modes of mind and the prevention of relapse in depression. *Behaviour Research and Therapy*, *37*(1), S53-s77.

Teasdale, J. D., & Barnard, P. J. (1993). *Affect, cognition, and change: Re-modelling depressive thought.* Hillsdale, NJ England: Lawrence Erlbaum Associates, Inc.

Thomsen, D. K. (2006). The association between rumination and negative affect: A review. *Cognition & Emotion, 20,* 1216–1235.

Üstün, T. B., Ayuso-Mateos, J. L., Chatterji, S., Mathers, C., & Murray, C. J. L. (2004). Global burden of depressive disorders in the year 2000. *British Journal of Psychiatry*, *184*(5), 386-392.

Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review,94,* 3–15.

Vallacher, R. R., & Wegner, D. M. (1989). Levels of personal agency: Individual variation in action identification. *Journal of Personality and Social Psychology, 57,* 660–671.

Van den Heuvel, M., Demerouti, E., Schreurs, B. H. J., Bakker, A. B., & Schaufeli, W. B. (2009). Does meaning-making help during organizational change?: Development and validation of a new scale. *The Career Development International*, *14*(6), 508-533.

Verstraeten, K., Vasey, M. W., Raes, F., & Bijttebier, P. (2009). Temperament and risk for depressive symptoms in adolescence: Mediation by rumination and

moderation by effortful control. *Journal of Abnormal Child Psychology*, *37*(3), 349-361.

Wagner, C. C., & Sanchez, F. P. (2002). The role of values in Motivational Interviewing. In W. R. Miller& S. Rollnick (Eds.). *Motivational Interviewing: Preparing people for change* (2nd ed., pp. 284-298). New York: Guiford.

Watkins, E. (2004). Adaptive and maladaptive ruminative self-focus during emotional processing. *Behaviour Research & Therapy*, 42, 1037−1052.

Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, *134*(2), 163-206.

Watkins, E. (2011). Dysregulation in level of goal and action identification across psychological disorders. *Clinical Psychology Review, 31*(2), 260-278.

Watkins, E. R., Baeyens, C. B., & Read, R. (2009). Concreteness training reduces dysphoria: Proof-of-principle for repeated cognitive bias modification in depression. *Journal of Abnormal Psychology*, *118*(1), 55-64.

Watkins, E., & Baracaia, S. (2002). Rumination and social problem-solving in depression. *Behaviour Research and Therapy*, 40, 1179−1189.

Watkins, E.R., Moberly, N.J. (2009). Concreteness training reduces dysphoria: a pilot proof-of-principle study. *Behavior Research and Therapy*, *47*(1), 48-53.

Watkins, E., Moberly, N. J., & Moulds, M. L. (2008). Processing mode causally influences emotional reactivity: Distinct effects of abstract versus concrete construal on emotional response. *Emotion*, *8*(3), 364-378.

Watkins, E. R., Moberly, N. J., & Moulds, M. L. (2011). When the ends outweigh the means: Mood and level of identification in depression. *Cognition And Emotion*, *25*(7), 1214-1227.

Watkins, E., & Moulds, M. (2005). Distinct modes of ruminative self-focus: Impact of abstract versus concrete rumination on problem solving in depression. *Emotion*, *5*(3), 319-328.

Watkins, E. R., & Moulds, M. L. (2009). Thought control strategies, thought suppression, and rumination in depression. International Journal Of Cognitive Therapy, 2(3), 235-251.

Watkins, E., & Teasdale, J. D. (2001). Rumination and overgeneral memory in depression: Effects of self-focus and analytic thinking. *Journal of Abnormal Psychology*, *110*(2), 353-357.

Watkins, E., & Teasdale, J. D. (2004). Adaptive and maladaptive self-focus in depression. *Journal of Affective Disorders*, *82*(1), 1-8.

Watkins, E., Teasdale, J. D., & Williams, R. M. (2000). Decentring and distraction reduce overgeneral autobiographical memory in depression. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences*, *30*(4), 911-920.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070.

Wegner, D. M., Vallacher, R. R., Kiersted, G., & Dizadji, D. (1986). Action identification in the emergence of social behavior. *Social Cognition*, *4*, 18–38.

Wells, A., & Matthews, G. (1996). Modeling cognition in emotional disorders: The S-REF model. *Behaviour Research and Therapy, 34*, 881−888.

Wenzlaff, R. M., & Wegner, D. M. (2000). Thought suppression. *Annual Review Of Psychology*, 5159-91.

Westerhof, G. J., Bohlmeijer, E. T., van Beljouw, I. M. J., & Pot, A. M. (2010). Improvement in personal meaning mediates the effects of a life review intervention on depressive symptoms in a randomized controlled trial. *The Gerontologist*, *50*(4), 541-549.

Whisman, M. A. (2001). The association between depression and marital dissatisfaction. In S. R. H. Beach (Ed.), *Marital and family processes in depression: A scientific foundation for clinical practice.* (pp. 3-24). Washington, DC US: American Psychological Association.

Wilson, K. G., Sandoz, E. K., Kitchens, J., & Roberts, M. (2010). The Valued Living Questionnaire: Defining and measuring valued action within a behavioral framework. *The Psychological Record*, *60*(2), 249-272.

Williams, J. M. G., Barnhofer, T., Crane, C., Herman, D., Raes, F., Watkins, E., & Dalgleish, T. (2007). Autobiographical memory specificity and emotional disorder. *Psychological Bulletin*, *133*(1), 122-148.

Williams, J. M., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology*, *95*(2), 144-149.

WHO International Consortium in Psychiatric Epidemiology (2001). Cross-national comparisons of the prevalences and correlates of mental disorders. *Bulletin of the World Health Organization*, *78*, 413–426.

Wrosch, C., Miller, G. E., Scheier, M. F., & de Pontet, S. B. (2007). Giving up on unattainable goals: Benefits for health? *Personality and Social Psychology Bulletin*, *33*(2), 251-265.

Wrosch, C., Scheier, M. F., Carver, C. S., & Schulz, R. (2003). The importance of goal disengagement in adaptive self-regulation: When giving up is beneficial. *Self and Identity*, *2*(1), 1-20.

Wrosch, C., Scheier, M. F., Miller, G. E., Schulz, R., & Carver, C. S. (2003). Adaptive self-regulation of unattainable goals: Goal disengagement, goal reengagement, and subjective well-being. *Personality and Social Psychology Bulletin*, *29*(12), 1494-1508.

Yalom, I. D. (1980). *Existential psychotherapy.* New York: Basic Books.

Zeigarnik, B. (1938). On finished and unfinished tasks. In W. D. Ellis (Ed.), *A source book of Gestalt psychology* (pp. 300–314). New York: Harcourt, Brace, & World.

Zich J. M., Attkisson C. C., & Greenfield T.K. (1990) Screening for depression in primary care clinics: the CES-D and the BDI. *International Journal of Psychiatry in Medicine*, 20, 259-277.